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CHECKLIST

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Checklist of the diatoms (Bacillariophyta) from Lake Naivasha, Kenya, with some historical notes

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Abstract

Lake Naivasha is one of only two large freshwater lakes in the Eastern Rift Valley of Kenya, East Africa. Together with its satellite lakes Crescent Island Crater, Oloidien and Sonachi, it comprises a great variety of pelagic and benthic habitats for aquatic biota, and its sediment record represents a unique archive of past climate change and long-term ecosystem dynamics in equatorial East Africa. This is particularly so because local paleoenvironmental reconstructions can be checked against historical data on the composition of aquatic fauna and flora collected in Lake Naivasha since the early 20th century. Some of the most prominent biological proxies for reconstructing past changes in lakes are diatoms (Bacillariophyta), a group of unicellular autotrophic eukaryotes of which the siliceous skeletons (valves) preserve well in lake sediments and are good indicators for, among others, climate-driven changes in salinity. However, diatom taxonomy and species concepts have changed a lot in recent decades, making it sometimes difficult for non-taxonomists to know which species are concerned in different published studies. This paper provides the currently accepted taxonomic names of the 310 specific and infraspecific diatom taxa reported from Lake Naivasha and its satellite lakes to date, together with their synonyms used in literature concerning these lakes as well as other, commonly used synonyms. Further, a short overview is given of the history of diatom research conducted on materials from Lake Naivasha and its satellite lakes. The present checklist may facilitate the identification and interpretation aspects of future diatom studies on the wider Lake Naivasha ecosystem and on other East African lakes that are less well studied.

Keywords

biodiversity, Crescent Island Crater, East Africa, Lake Oloidien, Lake Sonachi

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Introduction

Lake Naivasha is located at about 1885 m a.s.l. (above sea level) in the central valley of the Eastern (Gregory) Rift in Kenya between 0°43'08"S and 0°49'57"S and between 36°16'54"E and 36°25'46"E (Fig. 1). With a surface area fluctuating around 135 km^2, Lake Naivasha is, besides Lake Baringo, the only large freshwater lake in Kenya's portion of the Eastern Rift Valley, and consequently an important source of freshwater in the rift-valley region. It has two smaller satellite lakes, which, depending on the lake level, can be confluent with it or separated by a narrow sill: Lake Oloidien with a surface area of 5.1 km^2 at its southwestern corner, and Crescent Island Crater (1.9 km^2) along its eastern shore. Its third satellite lake is Lake Sonachi, also referred to as Crater Lake (e.g., Rich 1932) or Green Crater Lake (e.g., Damnati et al. 1991), is a very small saline crater lake (0.14 km^2) situated to the west and receiving underground water supply from the main basin of Lake Naivasha (MacIntyre and Melack 1982; Verschuren 1999a).

While the main basin of Lake Naivasha is hydrologically open, fed by the Malewa and Karati Rivers in the east and the Gilgil River in the north, and groundwater outflow to the south and the southeast, Lake Oloidien is hydrologically closed (Gaudet and Melack 1981; Verschuren et al. 2000b). Without its own river inflow, this lake depends on local rainfall and either direct confluence or subsurface inflow from Lake Naivasha (Verschuren et al. 1999a, 2000b). Crescent Island Crater Lake is hydrologically open through its direct confluence with the main lake. Only during periods of severe lowstands, when the connection with the main lake is fully interrupted, does it become a hydrologically closed system (Verschuren 2001; Van der Meeren et al. 2019).

During lake highstands, such as first recorded in 1897 but also the present-day situation after two episodes of strong transgression in 2011, 2012 and 2020, Lake Oloidien is broadly confluent with Naivasha and contains fresh water. However, when separated from Lake Naivasha during lake lowstands, it develops higher salinity because it then depends on local rainfall and subsurface inflow, while water losses are almost entirely due to evaporation (Verschuren et al. 2000b). Lake Sonachi is normally a strongly saline-alkaline ('soda') lake, but substantial changes in salinity during past episodes of wetter and drier climate conditions have also been reported in historical times (Verschuren et al. 1999a). This implies that freshwater as as well as inland saline communities of aquatic biota, among others of diatoms, can be found in the lakes of this aquatic system, making Lake Naivasha and its satellite lakes ideal for paleolimnological research involving both climate reconstruction and long-term ecological dynamics (Verschuren et al. 1999a, b, 2000a, 2000b; Mergeay et al. 2011; Van der Meeren et al. 2019; Van der Meeren and Verschuren 2021).

However, diatom taxonomy and species concepts have changed a lot since species description in this group of unicellular algae started in the 19th century. After a period of species lumping in the 20th century, the end of the last century saw the erection of new and restoration of many formerly described genera and species mainly due to better microscopes. Moreover, many new species were discovered, including tropical African taxa which had previously been assigned to European and/or North American

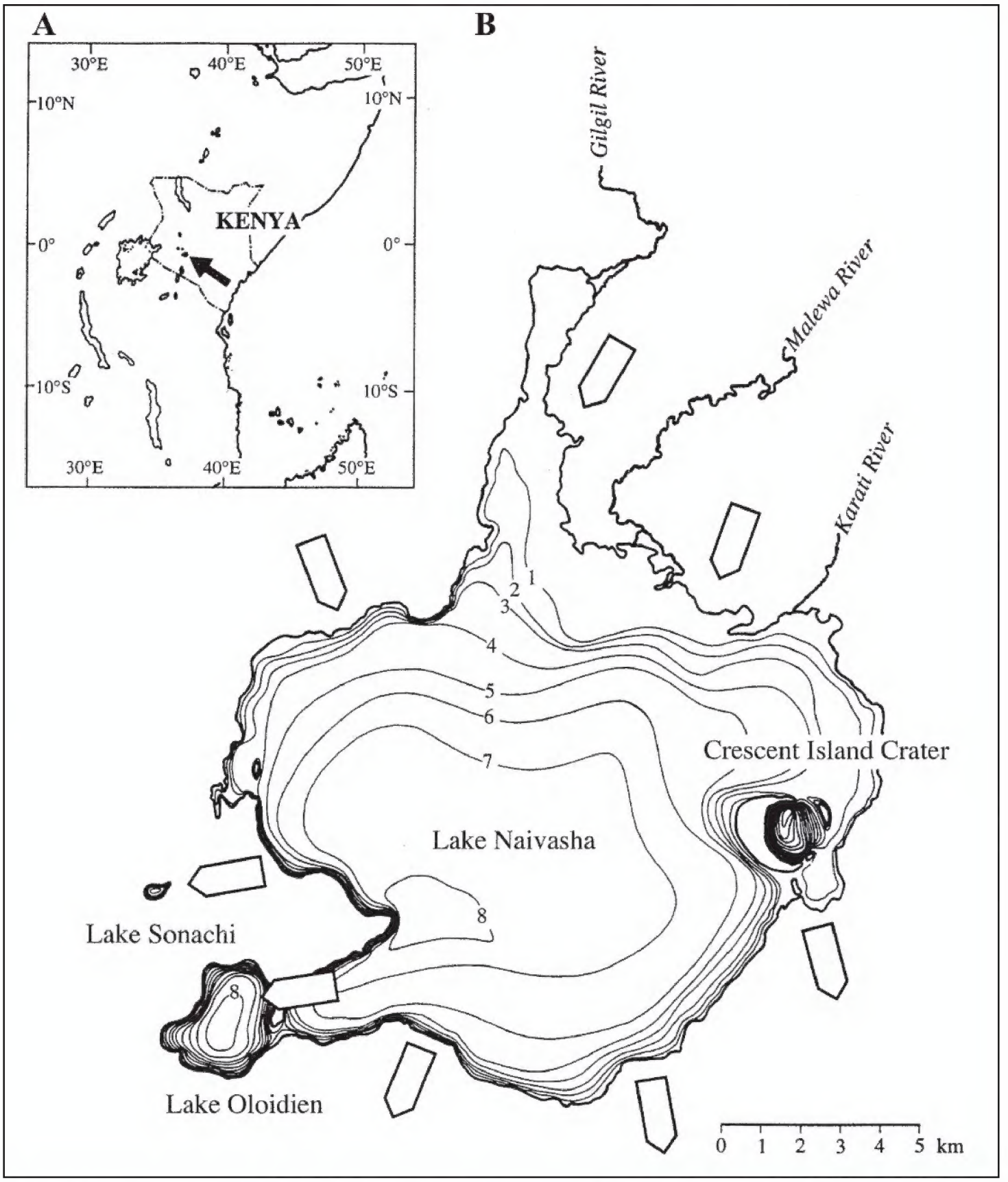

Figure 1. A location of Lake Naivasha in Kenya, East Africa **B** bathymetric map of Lake Naivasha and its satellite Lakes Oloidien, Sonachi and Crescent Island crater, relative to a lake-surface elevation of 1885.8 m above sea level. White arrows show the direction of the groundwater flow. From Verschuren et al. (2000b), as modified after Gaudet and Melack (1981) and Åse et al. (1986).

taxa due to the use of identification guides from these north-temperate regions. This makes it often very difficult for non-taxonomists to know exactly which diatom species are involved in the older and the more recent literature on Lake Naivasha. Because of the importance of Lake Naivasha in East African paleoecological and paleoclimate

studies, and the fact that diatoms have proven to be good indicators (so-called 'proxies') for changes in salinity (and nutrients) and reconstruction of past environmental situations, we found it opportune to make a checklist of all the diatoms reported up to now from Lake Naivasha and its three satellite lakes. Notably, the present checklist covers both recent phytoplankton and periphytic collections as well as fossil diatom valves recovered from sediment cores. The current taxonomically accepted names are provided together with their synonyms used in different studies as well as references to the publications or materials in case of unpublished results.

Material and methods

The material used for the present checklist is twofold. On the one hand, all literature data known to us, published between 1932 and the present, among others Rich (1932), Bachmann (1938), Richardson and Richardson (1972), Gasse (1986), Verschuren et al. (1999a), Verschuren et al. (1999b), Verschuren et al. (2000a), Verschuren et al. (2000b), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012) and Owino et al. (2020). On the other hand, counts of fossil diatom assemblages carried out on sediment cores from Naivasha, Crescent Island Crater, Oloidien and Sonachi, whose results are either unpublished, or were used for publications focusing on paleoenvironmental reconstruction that did not include full species lists.

The sediment sequences covered in this paper are listed in Table 1, with citation of the publication providing the most detailed information on their collection and characteristics.

All sediment cores were recovered from an anchored boat or platform using a combination of gravity coring and piston coring, except for NS93.2-F which was recovered using freeze coring (Verschuren 1999a).

Historical overview of diatom sampling and studies in Lake Naivasha

The first reports on diatoms from Lake Naivasha and its satellite lakes date back to the 1930s. Rich (1932) investigated samples collected between 18 April and 7 July 1929 by Miss Penelope Jenkin during the Percy Sladen Expedition to Kenya's Rift Valley Lakes (Jenkin 1936). From the 13 Naivasha samples she investigated, she only reported diatoms in three samples from near the mouth of the Gilgil River at the north end of the lake. In sample number 135 (surface) and number 193 (water over *Ceratophyllum*) Rich (1932) mentioned one and three diatom taxa respectively, and 30 diatom taxa in sample number 138 (mud) of which a diatom preparation was made. Besides the 30 taxa from the main basin of Naivasha, Rich (1932) reported one diatom, *Rhopalodia ventricosa* from one of the two samples collected in Lake Sonachi (referred to as 'Crater Lake'). Rich (1933) expanded the species list of Lake Naivasha by two taxa observed in samples taken in November 1930 and February 1931.

During the "Mission scientifique de l'Omo", organized by R. Jeannel and C. Arambourg, plankton samples from some Rift Lakes in Kenya were taken by hydrobiologist

Table 1. Sediment cores from Lakes Naivasha, Crescent Island, Oloidien and Sonachi included in the checked list, with the date of coring, the core length and age, and the reference to the publication providing the most detailed information.

Core	Lake	Coring date	Core length	Core age	Reference
NC93 (NC93.1-S + NC93.1-L)	Crescent Island Crater	08/1993	8.22 m	ca. 200 AD to Present	Verschuren 2001
NS93.2-F	Sonachi	08/1993	0.37 m	ca. 1750 AD to Present	Verschuren 1999a
NM93.1-S	main basin of Naivasha	08/1993		ca. 1800 AD to Present	Verschuren 1999b
NM91.1-S	main basin of Naivasha	08/1991		ca. 1800 AD to Present	Verschuren 1996
NO91.1-S:	Oloidien	08/1991	0.92 m	ca. 1800 AD to Present	Verschuren 1999b
NC20 (NC20-3G + NC20-1P)	Crescent Island Crater	01/2022	23.0 m	ca. 7000 BP to Present	Nguyen 2022

P.A. Chappuis, at the end of this expedition on the return from the Omo Valley (Ethiopia) to Mombasa (Kenya) from where the expedition members embarked back to France (Lester 1933). From the phytoplankton sample taken in Lake Naivasha on 12 April 1933 and which contained a lot of detritus from plant remains, Bachmann (1938) reported 14 diatom taxa. From the sample taken in 'Crater Lake' (= Lake Sonachi), which was dominated by *Arthrospira platensis* Gomont [as *Spirulina platensis* (Gomont) Geitler], Bachmann (1938) mentioned 4 diatom species.

By the end of the 1930s, 43 diatom species and infraspecific taxa were known from Lake Naivasha, distributed among 15 genera sensu lato; for Lake Sonachi this was only 5 species, belonging to five genera. However, *Rhopalodia ventricosa* was the only species from Lake Naivasha reported by both Rich (1932) and Bachmann (1938). About thirty years later, Richardson and Richardson (1972) reported 112 diatom taxa from a 28-meter long sediment sequence from Crescent Island Crater, covering the last ca. 9000 years and obtained by combining mutiple sediment cores taken between 30 December 1960 and 2 January 1961, and analyzed at 20-cm intervals. These taxa, 96 species and 16 varieties, are distributed among 25 genera, based on the taxonomy used. Of the 96 species, 15 are referred to as "cf." and 5 as "sp.".

Gasse (1986) studied six phytoplankton net samples from Lake Naivasha collected by herself on 5 December 1979 and by J. Kalff on 8 February, 18 March, 19 April, 2 May and June 1980, as well as one littoral mud sample collected by herself on 5 December 1979 and two bottom samples collected by C. Barton. From Crescent Island Crater she analyzed one phytoplankton net sample and one bottom mud sample collected by herself and C. Barton respectively. Finally, Gasse (1986) reported on three samples from Lake Sonachi collected on 6 December 1979: a phytoplankton net sample, littoral mud and scrapings from dead trees. From this total of 11 samples, Gasse (1986) reported 20 genera, 70 species, more than 14 varieties, two forms, one taxon with confer ("cf."), one taxon with affinity ("aff.") and two unknown species ("sp."). The exact number of varieties cannot be tracked down as it is not clear how many are included in the mentioned "and varieties".

In the 1990s, the growing interest in climate change in East Africa and worldwide led to several coring campaigns in Lake Naivasha and its satellite lakes followed by

intensive paleolimnological studies of the recovered sediment cores (Verschuren et al. 1999a, 1999b, 2000a, 2000b). Diatoms were one of the paleoecological proxies studied in a 8.22-m long composite sediment core (NC93) from Crescent Island Crater covering the last ca. 1650 years (Verschuren et al. 2000a; Van der Meeren et al. 2019), and in a shorter sediment core of 71-cm from Oloidien (NO91.1-S) covering the last ca. 200 years (Verschuren et al. 1999b, 2000b). For Lake Sonachi diatom studies were performed on 50 samples from a 37.2-cm freeze-core (NS93.2-F) collected in 1993 (Verschuren et al. 1999a). Diatoms from a sediment core taken in the main basin of Naivasha (NM93.1-S) were also investigated by one of us (CC) but these results have not been published to date.

The above mentioned paleoecological studies inspired Cocquyt and De Wever (2002) to study the epiphytic diatom communities in Lake Naivasha and its satellite lakes. For this purpose, herbarium specimens of aquatic plants collected in Lake Naivasha between 1909 and 1933, and kept in the collections of the Meise Botanic Garden (BR), were investigated: *Nymphaea caerulea* Savigny, *Potamogeton pectinatus* Linnaeus, *P. schweinfurthii* A.Bennett and *Najas horrida* A.Braun ex Magnus. Additional materials of *Nymphaea caerulea* and *Cyperus laevigatus* Linnaeus collected in 1999 in Lake Naivasha and Lake Sonachi respectively, were studied (Cocquyt and De Wever 2002).

Based on microscopic (i.e., morphological) analyses of fossil diatoms in core NSA-3 from the main basin of Lake Naivasha, Stoof-Leichsenring et al. (2011) reported 39 diatom species, while in follow-up molecular analyses these authors could identify 28 different diatom haplotypes in bulk sediment samples (Stoof-Leichsenring et al. 2012). All haplotypes that differed < 8% to a species-specific GenBank sequence (corresponding to a similarity of 92–100%) were assigned to that species. Haplotypes with a similarity below 92% to any reference sequence, were not assigned to a species, but to the respective diatom family. This implied that the genetic survey did not reveal all species morphologically identified. However, all genetic information and morphological data were highly correlated but not fully identical (Stoof-Leichsenring at al. 2012). It is clear that the African diatom flora is still not well known either morphologically or molecularly.

This brief overview of the diatom research on Lake Naivasha and its satellite lakes covers only taxonomic relevant publications for diatoms (Table 2). The numerous and important studies done on phytoplankton biomass, dynamics, chlorophyll, etc. and papers on algae other than diatoms, such as Kalff and Watson (1986), Harper et al. (1993, 2003) and Ballot et al. (2009), are not included in the present overview. However, the diatom species names mentioned in those ecological studies concern the most common diatoms, of which the taxon names can be found in this checklist either as a currently accepted name or as a synonym.

Results and discussion

Over the last decades, from the earliest start of diatom investigation of the Lake Naivasha system up to now, a total of 205 different species and infraspecific taxa have been

reported: 132 from the main basin of Lake Naivasha, 123 from Crescent Island Crater, 43 from Oloidien and 15 from Sonachi (Table 2). When including unpublished studies of sediment core material this number increases to 310 (236, 149, 43 and 52 respectively) distributed over 66 genera. *Cymatopleura* and *Rhopalodia* are kept as separate genera and the species are not included in *Surirella* and *Epithemia* respectively as recently recommended (Ruck et al. 2016a, b; Cocquyt et al. 2018). However, some of the reported taxa are unidentified and referred to as "aff." (3), "cf." (38) and "sp." (14). Probably a number of these belong to already identified taxa and fall within the variability of a species, while others are potentially new to science and should be the subject of further taxonomic research.

Table 2. Overview of the number of diatom species and infraspecific taxa reported in the most important publications from Lake Naivasha and its satellite basins mentioning morphological diatom identifications.

Lake	Naivasha	Crescent Island Crater	Oloidien	Sonachi
Rich (1932)	29	-	-	1
Bachmann (1938)	14	-	-	4
Richardson and Richardson (1972)	-	102	-	-
Gasse (1986)	58	46	35	6
Verschuren et al. (1999a, b)	-	-	9	2
Verschuren et al. (2000)	-	-	8	-
Cocquyt and De Wever (2002)	39	12	-	6
Stoof-Leichsenring et al. (2011, 2012)	40	-	-	-
Owino et al. (2020)	23	-	-	-
Total number of diatom taxa	123	132	43	15

Taking into consideration only the identified species and infraspecific taxa, 7 taxa (3.4%) are considered to be endemic to tropical Africa (Sub-Saharan Africa without southern Africa), besides 4 pantropical (2.0%) and 2 taxa restricted to the African continent (1.0%). This proportion is very small compared to other tropical lakes such as Lake Tanganyika where in the northern part up to 13.1% of the reported diatoms have a distribution restricted to tropical Africa (Cocquyt 2000). However, the number of tropical African, pantropical and African diatom taxa can increase as the unidentified taxa and those referred to as "aff." and "cf." potentially are taxa with a restricted distribution. Two other remarks should also be noted, namely that it is quite possible that material from Lake Naivasha and adjacent lakes was misidentified, as often European and North American diatom floras were used, and secondly, that diatom species, originally described from tropical Africa, have erroneously been reported from other tropical regions or from temperate regions in Europe and North America. Examples of this second possibility are several *Nitzschia* species, such as *N. accommodata*, *N. confinis*, *N. latens*, *N. spiculoides*, *N. subcommunis* and *N. tarda*, all described by Hustedt (1949) from the formerly Albert National Park (Belgian Congo), nowadays the Virunga National Park in the eastern part of the Democratic Republic of the Congo and the Volcanoes National Park in Rwanda.

Molecular analysis confirmed the morphological identification of 14 of the 49 species and infraspecific taxa observed in the sediment cores studied by Stoof-Leichsenring et al. (2012). This implies that slightly more than a quarter of the observed taxa are cosmopolitan. The genetically identified species had a higher internal similarity range than those that had been found in taxonomic studies on supposedly cosmopolitan species (Abarca et al. 2014). In addition, there are very few molecular data available of African taxa to serve as a reference library. The remaining three quarters of the reported taxa comprise species with restricted distribution, such as restricted to the tropics, to Africa, or to tropical Africa. This supports our hypothesis mentioned above that the number of tropical African, African and pantropical taxa must be higher than the number obtained by the results of the distribution of taxa present in this checklist.

In the overview below, taxa are listed according to the systematics of Round et al. (1990), with some adaptations to accommodate genera described after its publication. Although this classification is not the most recent one, and major changes have already occurred on higher taxonomic level (e.g. Adl et al. 2018), we believe it gives a clear and workable reference list of the diatom taxa known from Lake Naivasha, especially because many researchers who include diatoms in their research on Lake Naivasha are not taxonomists. The classification given here includes classes, orders, families and genera. Within each family, genera are arranged alphabetically and so are the species and infra-specific taxa within the genera. The authorities are compliant with the International Plant Names Index (2022). The most current used synonyms are given, as well as the synonyms used in the published papers. For each species the literature is cited where this taxon was mentioned for Lake Naivasha and its satellite lakes in the most important publications dealing with diatom taxonomy. With regards to our own unpublished observations, reference is made to the sediment core in which the species was observed.

Checklist

Class Coscinodiscophyceae Round & R.M.Crawford, 1990
Order Thalassiosirales Glezer & Makarova, 1986
Family Thalassiosiraceae M.Lebour, 1930
Genus *Thalassiosira* Cleve, 1973

1. *Thalassiosira faurii* (Gasse) Hasle, 1978: 282, figs 61–69.

Coscinodiscus faurii Gasse nom. inval., 1975: 24, pl. 32 figs 1, 2.

Observation. Main basin: Stoof-Leichsenring et al. (2012), Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.

Crescent Island Crater: Cocquyt and De Wever (2002), NC93, NC20.

Sonachi: NS93.2-F.

Occurrence. Epiphytic, sediment core.

2. *Thalassiosira rudolfi* (H.Bachmann) Hasle, 1978: 279, figs 51–60, 65.

Coscinodiscus rudolfi H.Bachmann, 1939: 135, fig. 7. The specific epithet is *rudolfi* and not *rudolfii* because the species is named after Lake Rudolf.

Observation. Main basin: NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Van der Meeren et al. (2019), NC20.

Oloidien: Verschuren et al. (1999b).

Sonachi: NS93.2-F.

Occurrence. Sediment core.

Remark. Rich (1932) reported a *Coscinodiscus* sp. from bottom mud in the main basin of Naivasha, probably one of the *Thalassiosira* taxa mentioned above. In NS93.2-F from Sonachi a valve fragment of *Thalassiosira* was observed.

Class Coscinodiscophyceae Round & R.M.Crawford, 1990
Order Thalassiosirales Glezer & Makarova, 1986
Family Stephanodiscaceae Glezer & Makarova, 1986
Genus *Cyclotella* (Kützing) Brébisson, 1838

3. *Cyclotella meneghiniana* Kützing, 1844: 50, pl. 30 fig. 68.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Cocquyt and De Wever (2002), NC93, NC20.

Oloidien: Verschuren et al. (1999b).

Sonachi: NS93.2-F.

Occurrence. Epiphytic, bottom mud, sediment core.

4. *Cyclotella* sp.

Observation. Main basin: NM91.1-S, NM93.1-S.

Crescent Island Crater: NC93.

Occurrence. Sediment core.

Genus *Cyclostephanos* Round 1987

5. *Cyclostephanos damasii* (Hustedt) Stoermer & Håkansson, 1988: 346.

Stephanodiscus damasii Hustedt, 1949: 57, pl. I figs 2–5.

Observation. Main basin: Cocquyt and De Wever (2002).

Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Epiphytic, sediment core.

6. *Cyclostephanos invisitatus* (M.H.Hohn & Hellerman) E.C.Theriot, Stoermer & Håkansson, 1988: 256, figs 18–24.

Stephanodiscus invisitatus M.H.Hohn & Hellerman, 1963: 325, pl. 1 fig. 7.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

A small *Cyclostephanos* taxon was observed in the sediment core NM91.1-S taken from the main basin of Lake Naivasha, which may be identical to *Cyclostephanos invisitatus*.

Genus *Discostella* Houk & Klee, 2004

7. *Discostella pseudostelligera* (Hustedt) Houk & Klee, 2004: 223, figs 109, 110.

Cyclotella pseudostelligera Hustedt, 1939: 581, figs 1, 2.

Observation. Crescent Island Crater: NC93.

Occurrence. Sediment core.

8. *Discostella stelligera* (Cleve & Grunow) Houk & Klee, 2004: 208.

Cyclotella meneghiniana var. *stelligera* Cleve & Grunow, 1881: 22, pl. 5, fig. 63a, c.
Cyclotella stelligera (Cleve & Grunow) Van Heurck, 1882: pl. XCIV figs 22–26.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), NC93, NC20.

Occurrence. Sediment core.

Cocquyt and De Wever (2002) reported a *Cyclotella* cf. *stelligera* on herbarium material from the main basin of Lake Naivasha.

Genus *Lindavia* (Schütt) De Toni & Forti, 1900

9. *Lindavia glomerata* (H.Bachmann) Adesalu & Julius, 2017: 170.

Cyclotella glomerata H.Bachmann, 1911: 131, figs 106–108.

Observation. Main basin: Gasse (1986), NM91.1-S, NM93.1-S.

Occurrence. Plankton, sediment core.

Genus *Pantocsekiella* K.T.Kiss & Ács, 2016

10. *Pantocsekiella* cf. *comensis* (Grunow) K.T.Kiss & Ács, 2016: 65.

Cyclotella comensis Grunow, 1882: pl. 93 figs 16, 17.

Observation. Main basin: Cocquyt and De Wever (2002).
Occurrence. Epiphytic.

11. *Pantocsekiella kuetzingiana* (Thwaites) K.T.Kiss & Ács, 2016: 67.

Cyclotella kuetzingiana Thwaites, 1848: 169, pl. XI fig. D 1–5.

Observation. Main basin: Gasse (1986) (and varieties), Owino et al. (2020), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Plankton, bottom mud, sediment core.

12. *Pantocsekiella ocellata* (Pantocsek) K.T.Kiss & Ács, 2016: 62.

Cyclotella ocellata Pantocsek, 1901: 134, pl. IV fig. 318.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2012), Owino et al. (2020), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20, NC93.
Lake Sonachi: NS93.2-F.
Occurrence. Bottom mud, epiphytic, sediment core.

Genus *Stephanodiscus* Ehrenberg, 1845

13. *Stephanodiscus* cf. *agassizensis* Håkansson & H.J.Kling, 1989: 283, 285, figs 56–59.

Observation. Crescent Island Crater: core NC20.
Occurrence. Sediment core.

14. *Stephanodiscus astraea* (Kützing) Grunow, 1880: 114 complex.

Cyclotella astraea Kützing, 1849: 19.

Observation. Main basin: Owino et al. (2020).
Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

15. *Stephanodiscus* cf. *hantzschii* Grunow, 1880: 115, pl. VII fig. 131.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Main basin: NS91.1-S.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

16. *Stephanodiscus* cf. *minutulus* (Kützing) Cleve & Möller, 1882: 300.

Cyclotella minutula Kützing, 1844: 50.

Observation. Main basin: Cocquyt and De Wever (2002).
Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Epiphytic, sediment core.

Remark. Beside the above mentioned *Stephanodiscus* taxa, Owino et al. (2020) reported an unidentified species in a sediment core taken from the main basin of Lake Naivasha.

Class Coscinodiscophyceae Round & R.M.Crawford, 1990
Order Aulacoseirales R.M.Crawford, 1990
Family Aulacoseiraceae R.M.Crawford, 1990
Genus *Aulacoseira* Thwaites, 1848

17. *Aulacoseira agassizii* (Ostenfeld) Simonsen, 1979: 56.

Melosira agassizii Ostenfeld, 1909: 179, pl. 2 figs 18–20.

Observation. Main basin: Gasse (1986), NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC93, NC20.
Occurrence. Plankton, bottom mud, sediment core.

18. *Aulacoseira alpigena* (Grunow) Krammer, 1991: 93, figs 1–15.

Melosira distans var. *alpigena* Grunow, 1882: pl. LXXXVI figs 28, 29.
Aulacoseira distans var. *alpigena* (Grunow) Simonsen, 1979: 57.

Observation. Main basin: NM93.1-S and cf. this taxon in NM91.1-S.
Crescent Island Crater: NC93.
Occurrence. Sediment core.

19. *Aulacoseira ambigua* (Grunow) Simonsen, 1979: 56.

Melosira crenulata var. *ambigua* Grunow, in Van Heruck 1882: pl. 88 figs 12–15.

Melosira ambigua (Grunow) O.Müller, 1903: 332.

Observation. Main basin: Rich (1932), Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), Owino et al. (2020), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Van der Meeren et al. (2019), NC20, and cf. this taxon in NC93.

Lake Oloidien: Verschuren et al. (1999b), Verschuren et al. (2000b).

Occurrence. Plankton, epiphytic, bottom mud, sediment core.

20. *Aulacoseira distans* (Ehrenberg) Simonsen, 1979: 57.

Gaillonella distans Ehrenberg, 1836: 221, pl. III fig. 5.
Melosira distans (Ehrenberg) Kützing, 1844: 54.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).

Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

21. *Aulacoseira distans* var. *africana* (O.Müller) Simonsen, 1979: 57.

Melosira distans var. *africana* O.Müller, 1904: 293, pl. IV figs 32, 33.

Observation. Main basin: Stoof-Leichsenring et al. (2011), NM91.1-S, NM93.1-S.

Crescent Island Crater: NC93, NC20.

Occurrence. Sediment core.

22. *Aulacoseira* cf. *goetzeana* (O.Müller) Simonsen, 1979: 58.

Melosira goetzeana O.Müller, 1904: 290, pl. IV fig. 20.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

23. *Aulacoseira granulata* (Ehrenberg) Simonsen, 1979: 58.

Gaillonella granulata Ehrenberg, 1843: 415.
Melosira granulata (Ehrenberg) Ralfs in Pritchard, 1861: 820.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC93, NC20.

Lake Oloidien: Verschuren et al. (1999b), Verschuren et al. (2000b).

Occurrence. Plankton, bottom mud, sediment core.

Richardson and Richardson (1972) distinguish a variety of *A. granulata*, "*A. granulata* var. (coarse variety)", which has much coarser areolae than the other valves of *A. granulata* and varieties observed in the studied sediment core materials. This taxon may be identified as *Aulacoseira* cf. *goetzeana* in core NC20.

24. *Aulacoseira granulata* var. *angustissima* (O.Müller) Simonsen, 1979: 58.

Melosira granulata var. *angustissima* O.Müller, 1899: 315.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Van der Meeren et al. (2019), NC93, NC20.

Occurrence. Plankton, bottom mud, sediment core.

In NC93, the form *curvata* was distinguished within this taxon.

25. *Aulacoseira herzogii* (Lemmermann) Simonsen, 1979: 59.

Melosira herzogii Lemmermann, 1910: 316, figs 12, 13.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

26. *Aulacoseira humilis* (A.Cleve) Genkal & Trifonova, in Trifonova and Genkal 2001: 315.

Melosira distans var. *humilis* A.Cleve, 1939: 6, fig. 1.
Aulacoseira distans var. *humilis* (A.Cleve) Gasse, 1986: 76, pl. 3 figs 1–4, 7–9.

Observation. Crescent Island Crater: NC93.

Occurrence. Sediment core.

27. *Aulacoseira italica* (Ehrenberg) Simonsen, 1979: 60.

Gaillonella italica Ehrenberg, 1838: 171, pl. 10 fig. 6.
Melosira italica (Ehrenberg) Kutzing, 1844: 55, pl. 2 fig. 6.

Observation. Main basin: Bachmann (1938).

Crescent Island Crater: in NC93 a taxon was identified as *A.* cf. *italica*.

Lake Oloidien: Verschuren et al. (1999b), Verschuren et al. (2000b).

Occurrence. Phytoplankton, sediment core.

28. *Aulacoseira italica* var. *bacilligera* (O.Müller) Gasse, 1986: 81.

Melosira italica var. *bacilligera* O.Müller, 1844: 55, pl. 2 fig. 6.

Observation. Main basin: Cocquyt and De Wever (2002).
Occurrence. Epiphytic.

29. *Aulacoseira jonensis* (Grunow) Houk & Klee, 2007: 99, pl. LXXXII figs 1–13, pl. LXXXIII figs 1–8.

Melosira granulata var. *jonensis* Grunow, 1882: pl. LXXXVII figs 23–26.
Aulacoseira granulata var. *jonensis* (Grunow) Simonsen, 1979: 58.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC93.
Occurrence. Sediment core.

30. *Aulacoseira muzzanensis* (F.Meister) Krammer, 1991: 98.

Melosira muzzanensis F.Meister, 1912: 41, 232, pl. 1 fig. 10.
Aulacoseira granulata var. *muzzanensis* (F.Meister) Simonsen, 1979: 59.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: cf. this taxon in NC20.
Occurrence. Sediment core.

31. *Aulacoseira nyassensis* (O.Müller) Simonsen, 1979: 61.

Melosira nyassensis O.Müller, 1904: 285, pl. III fig. 3.
Melosira nyassensis [subsp. *devriesii*] f. *minor* O.Müller, 1904: 3287, pl. III fig. 2.

Observation. Main basin: Rich (1932), Owino et al. (2020), NM91.1-S, NM93.1-S.
Occurrence. Phytoplankton, sediment core.

32. *Aulacoseira nyassensis* var. *victoriae* (O.Müller) Simonsen, 1979: 61.

Melosira nyassensis var. *victoriae* O.Müller, in Ostenfeld 1908: 338.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.
According to AlgaeBase (Guiry and Guiry 2022) the taxonomic status of this taxon requires further investigation.

33. *Aulacoseira pyxis* (O.Müller) Simonsen, 1979: 62.

Melosira pyxis O.Müller, 1904: 291, pl. IV figs 23–5.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

Remark. Besides the seventeen above mentioned *Aulacoseira* taxa, an unidentified species was reported in the main basin by Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), and in NM91.1-S, NM93.1-S and NS93.2-F. In addition, Owino et al. (2020) erroneously mentioned two species with the generic name of *Aulacoseira*: *A schroidera* and *A ulna*. The latter is probably *Ulnaria ulna*. We have no idea which species is meant by the former but the most similar name is *Melosira schroederi* (Wołoszyńska 1914: 186, pl. III figs 11, 12, 14) described from Lake Victoria.

Class Coscinodiscophyceae Round & R.M.Crawford, 1990
Order Chaetocerotales Round & R.M.Crawford, 1990
Family Chaetocerotaceae Ralfs in Pritchard, 1861
Genus *Chaetoceros* Ehrenberg, 1844

34. *Chaetoceros* sp.

Observation. Main basin: Stoof-Leichsenring et al. (2011).
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

Class Fragilariophyceae, Round
Order Fragilariales P.C.Silva, 1962
Family Fragilariaceae Greville, 1833
Genus *Belonastrum* (Lemmermann) Round & Maidana, 2001

35. *Belonastrum berolinense* (Lemmermann) Round & Maidana, 2001: 22.

Synedra berolinensis Lemmermann, 1900: 31.
Fragilaria berolinensis (Lemmermann) Lange-Bertalot, 1993: 43, pl. 134 figs 21–25.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

Genus *Fragilaria* Lyngbye, 1819

36. *Fragilaria amphicephaloides* Lange-Bertalot, 2013: 256, pl. 7 figs 7–10.

Synedra amphicephala Kützing, 1844: 64, pl. 3 fig. 12.

Fragilaria amphicephala (Kützing) Lange-Bertalot nom. illeg., 2000.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

37. *Fragilaria capucina* Desmazières, 1830, no. 453.

Observation. Main basin: Stoof-Leichsenring et al. 2012, Owino et al. 2020.
Lake Oloidien: Verschuren et al. (1999b), Verschuren et al. (2000b).
Occurrence. Sediment core.

38. *Fragilaria fragilarioides* (Grunow) Cholnoky, 1963: 169, pl. 25 figs 29, 30.

Synedra rumpens var. *fragilarioides* Grunow, 1881: pl. 40 fig. 12.
Fragilaria rumpens var. *fragilarioides* (Grunow) A.Cleve, 1953: 42, fig. 352b.
Fragilaria capucina var. *fragilarioides* (Grunow) Ludwig & Flores, 1997: 58, figs 2–9.

Observation. Main basin: Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Epiphytic, sediment core.

39. *Fragilaria radians* (Kützing) D.M.Williams & Round, 1987: 269.

Synedra radians Kützing, 1844: 64, pl. 14/7 figs 1–4.
Synedra acus var. *radians* (Kützing) Hustedt, 1930: 155 fig. 171.
Synedra acus f. *radians* (Kützing) Hustedt, 1957: 237.

Observation. Main basin: Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Crescent Island Crater: Cocquyt and De Wever (2002), Van der Meeren et al. (2019), NC20.
Occurrence. Epiphytic, sediment core.

40. *Fragilaria rumpens* (Kützing) G.W.F.Carlson, 1913: 29.

Synedra rumpens Kützing, 1844: 69, pl. 1 figs 4, 5.
Fragilaria capucina (Kützing) Lange-Bertalot ex Bukhtiyarova, 1995: 417.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Crescent Island Crater: Gasse (1986).
Occurrence. Plankton, bottom mud.
In NC20 an unspecified variety of this taxon was reported.

41. *Fragilaria tabulata* var. *truncata* (Greville) Lange-Bertalot, 1938: 167, fig. 1 a–g.

Echinella fasciculata var. *truncata* Greville, 1832: pl. 16 fig. 4.
Synedra vaucheriae var. *truncata* (Greville) Rabenhorst, 1864: 132.
Fragilaria vaucheriae var. *truncata* (Greville) Stoermer & Yang, 2005: 1701.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

42. *Fragilaria tenera* (W.Smith) Lange-Bertalot, 1980: 746.

Synedra tenera W.Smith, 1856: 98.

Observation. Main basin: Gasse (1986), NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Plankton, bottom mud, sediment core.

43. *Fragilaria vaucheriae* (Kützing) J.B.Petersen, 1938: 167, fig. 1 a–g.

Exilaria vaucheriae Kützing, 1833: 32, fig. 38.
Synedra vaucheriae (Kützing) Kützing, 1844: 65, pl. 14 fig. 4.
Fragilaria capucina var. *vaucheriae* (Kützing) Lange-Bertalot, 1980: 747.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

A unidentified *Fragilaria* sp. was observed in the sediment core NM91.1-S taken from the main basin of Lake Naivasha. However, as the diatom analysis was performed at the beginning of the 1990s before the delineation of many now accepted genera within *Fragilaria* s.l., we cannot determine the current genus of this species.

Genus *Pseudostaurosira* D.M.Williams & Round, 1988

44. *Pseudostaurosira brevistriata* (Grunow) D.M.Williams & Round, 1988: 276, figs 28–31.

Fragilaria brevistriata Grunow in Van Heurck, 1885: 157, pl. 45 fig. 32.
Staurosira brevistriata (Grunow) Grunow, 1884: 101.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

Genus *Punctastriata* D.M.Williams & Round, 1988

45. *Punctastriata lancettula* (Schumann) P.B.Hamilton & Siver, 2008: 363.

Fragilaria lancettula Schumann, 1867: 52, pl. 1 fig. 4.
Fragilaria pinnata var. *lancettula* (Schumann) Hustedt, 1913: pl. 297 figs 51, 59–64.
Staurosirella pinnata var. *lancettula* (Schumann) Siver, 2005: 197.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

Genus *Staurosira* Ehrenberg, 1843

46. *Staurosira binodis* (Ehrenberg) Lange-Bertalot, 2011: 260, pl. 10 figs 41–57.

Fragilaria binodis Ehrenberg, 1854: 12, pl. V:II fig. 26, pl. VI:I fig. 43, pl. X fig. 15.
Fragilaria construens f. *binodis* (Ehrenberg) Hustedt, 1957: 231.
Staurosira construens var. *binodis* (Ehrenberg) P.B.Hamilton, 1992: 29.
Pseudostaurosira construens var. *binodis* (Ehrenberg) Edlund nom. inval., 1994: 12.
Pseudostaurosira binodis (Ehrenberg) Edlund, 2001: 88.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

Richardson and Richardson (1972) mention *Fragilaria construens* var. *binodis* (Ehrenberg) Grunow. We think that they wanted to cite *Fragilaria construens* f. *binodis* (Ehrenberg) Hustedt and have erroneously put Grunow as author instead of Hustedt. That they might have meant *Fragilaria construens* var. *binodis* Stockmayer nom. inval. (Stockmayer 1909: 75) seems unlikely. Moreover, according to Guiry and Guiry (2022) "The taxonomic and/or nomenclatural status of this taxon is in some way unresolved and requires further investigation".

47. *Staurosira construens* Ehrenberg, 1843: 424.

Fragilaria construens (Ehrenberg) Grunow, 1862: 101.
Staurosira venter var. *construens* (Ehrenberg) Cleve & Möller, 1879: 270–271.

Observation. Main basin: NM93.1-S, and cf. this taxon in NM91.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

48. *Staurosira construens* var. *exigua* (W.Smith) H.Kobayasi, 2002: 90.

Triceratium exiguum W.Smith, 1856: 87.

Fragilaria construens var. *exigua* (W.Smith) Schulz-Danzig, 1920: 750, figs 9–16.
Fragilaria exigua (W.Smith) Lemmermann nom. illeg., 1908: 409.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

49. *Staurosira dubia* Grunow nom. inval. in Cleve & Möller, 1879: 270–271.

Fragilaria leptostauron var. *dubia* (Grunow) Hustedt nom. inval., 1931: 254, figs 668h–i.

Observation. Crescent Island Crater: Gasse (1986).
Occurrence. Bottom mud.
According to Guiry and Guiry (2022) the taxonomic or nomenclatural status (or both) of this entity is in some way unresolved and requires further investigation.

50. *Staurosira inflata* (Heiden) A.Rusanov, Ács, E.Morales & Ector, 2018: 341, figs 3, 20–25, 30–43.

Synedra inflata Heiden, 1900: 14, fig. 19.
Fragilaria heidenii Østrup, 1910: 190, pl. 5 fig. 118.

Observation. Main basin: core NM91.1-S, core NM93.1-S.
Occurrence. Sediment core.

51. *Staurosira leptostauron* (Ehrenberg) Kulikovskiy & Genkal, 2011: 363, pl. 2 figs. 1–6, pl. 8 fig. 1.

Biblarium leptostauron Ehrenberg, 1854: 106, figs. 5–8.
Staurosira leptostauron (Ehrenberg) D.M.Williams & Round, 1988: 276, figs. 22, 23.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

52. *Staurosira subsalina* (Hustedt) Lange-Bertalot, 2004: 115.

Fragilaria construens var. *subsalina* Hustedt, 1925: 106, figs. 5–8.
Fragilaria construens f. *subsalina* (Hustedt) Hustedt, 1957.
Pseudostaurosira subsalina (Hustedt) E.A.Morales, 2005: 115.

Observation. Crescent Island Crater: NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

53. *Staurosira venter* (Ehrenberg) Cleve & J.D.Möller, 1879: 242.

Fragilaria venter Ehrenberg, 1856: 87.
Fragilaria construens var. *venter* (Ehrenberg) Grunow, in Van Heurck 1881: pl. 45 figs 21b, 23, 24b, 26a, 26b.
Fragilaria construens var. *venter* (Ehrenberg) P.B.Hamilton, 1992: 29.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Staurosirella* D.M.Williams & Round, 1988

54. *Staurosirella africana* (Hustedt) D.M.Williams & Round, 1988: 276.

Fragilaria africana Hustedt, 149: 62, pl. 2 figs 29–34.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

55. *Staurosirella pinnata* (Ehrenberg) D.M.Williams & Round, 1988: 274.

Fragilaria pinnata Ehrenberg, 1843: 415, pl. 3 figs 6, 8.
Punctastriata pinnata (Ehrenberg) D.M.Williams & Round, 1987: 278.

Observation. Main basin: Gasse (1986), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Plankton, sediment core.
In NC20 from Crescent Island, an unidentified variety of *Staurosirella pinnata* was reported.

56. *Staurosirella* sp.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Synedra* Ehrenberg, 1830

57. *Synedra cunningtonii* (Kützing) G.S.West, 1907: 151, pl. 8 fig. 4.

Observation. Main basin: NM93.1-S, and cf. this taxon in NM91.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.

Occurrence. Sediment core.

The observed valves of this taxon in the materials of NM93.1-S. appear morphologically closely related to *Fragilaria nanana* and *F. tenera*, especially the nearly straight valves that are only slightly constricted/deformed mid-valve.

Genus *Ulnaria* (Kützing) Compère, 2001

58. *Ulnaria acus* (Kützing) Aboal, 2003: 102.

Synedra acus Kützing, 1844: 68, pl. 15 fig. VII.
Fragilaria ulna var. *acus* (Kützing) Lange-Bertalot, 1980: 745.
Fragilaria ulna f. *acus* (Kützing) Krammer & Lange-Bertalot ,1991: 144, fig: 122: 11–13, fig. 119: 8.
Ulnaria ulna var. *acus* (Kützing) Compère nom. inval., 2003: 70, pl. 12 figs 8–10.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), Owino et al. (2020), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Cocquyt and De Wever (2002), NC20.

Lake Oloidien: Gasse (1986).

Occurrence. Plankton, epiphytic, bottom mud, sediment core.

59. *Ulnaria amphirhynchus* (Ehrenberg) Compère & Bukhtiyarova, 2006: 280.

Synedra amphirhynchus Ehrenberg, 1843: 425, pl. III fig. I.25.
Synedra ulna var. *amphirhynchus* (Ehrenberg) Grunow, 1862: 397.
Ulnaria ulna var. *amphirhynchus* (Ehrenberg) Aboal, 2003: 113.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

60. *Ulnaria biceps* (Kützing) Compère, 2006: 281.

Synedra biceps Kützing, 1844: 66, pl. 14/18, 14/21 fig. 13.
Synedra ulna f. *biceps* (Kützing) Hustedt, 1957: 236.
Fragilaria ulna var. *biceps* (Kützing) Compère, 1991: 214.
Fragilaria biceps (Kützing) Lange-Bertalot nom. illeg., 1993: 43, pl. 121 figs 1–5.

Observation. Crescent Island Crater: NC20

Occurrence. Sediment core.

61. *Ulnaria contracta* (Østrup) E.A.Morales & M.L.Vis, 2007: 125.

Synedra ulna var. *contracta* Østrup, 1901: 281 fig. 247.
Fragilaria ulna var. *contracta* (Østrup) Main, 1988: 96.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

62. *Ulnaria danica* (Kützing) Compère & Bukhtiyarova, 2006: 281.

Synedra danica Kützing, 1844: 66, pl. 14 fig. 13.
Fragilaria ulna var. *danica* (Kützing) Kalinsky, 1982: 125.
Fragilaria danica (Kützing) Lange-Bertalot, 1996: 54, pl. 7 fig. 1, pl. 109 figs 1, 1'.
Synedra ulna var. *danica* (Kützing) Van Heurck, 1885: 151.
Synedra ulna f. *danica* (Kützing) Hustedt, 1957: 151.

Observation. Main basin: Rich (1932).
Crescent Island Crater: NC20.
Occurrence. Bottom mud, sediment core.

63. *Ulnaria delicatissima* (W.Smith) Aboal & P.C.Silva, 2004: 361.

Synedra delicatissima W.Smith, 1853: 72, pl. 12 fig. 94.
Synedra acus var. *delicatissima* (W.Smith) Rabenhorst, 1864: 136.
Fragilaria delicatissima (W.Smith) Lange-Bertalot nom. illeg., 1980: 746.

Observation. Main basin: Bachmann (1938), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Occurrence. Plankton, sediment core.

64. *Ulnaria delicatissima* var. *angustissima* (Grunow) Aboal & P.C.Silva, 2004: 361.

Synedra delicatissima var. *angustissima* Grunow, 1881: pl. XXXIX fig. 10.
Synedra acus var. *delicatissima* (Grunow) Van Heurck, 1885: 151.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Occurrence. Sediment core.

65. *Ulnaria nyansae* (G.S.West) D.M.Williams, 2007: 125.

Synedra nyansae G.S.West, 1907: 149, pl. 8 fig. 3.

Observation. Main basin: Owino et al. (2020).
Occurrence. Sediment core.

66. *Ulnaria ulna* (Nitzsch) Compère, 2001: 100.

Bacillaria ulna Nitzsch, 1817: 99, pl. V figs 1–10.
Synedra ulna (Nitzsch) Ehrenberg, 1832: 87.
Fragilaria ulna (Nitzsch) Lange-Bertaot, 1980: 745.

Observation. Main basin: Rich (1932), Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), Owino et al. (2020), NM93.1-S, and cf. this taxon in NM91.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.

Lake Oloidien: Verschuren et al. (1999b), Verschuren et al. (2000b).

Occurrence. Plankton, bottom mud, sediment core.

67. *Ulnaria ulna* var. *spathulifera* (Grunow) Aboal, 2003: 114.

Synedra spathulifera Grunow, 1881: pl. XXXVIII fig. 4.
Synedra ulna var. *spathulifera* (Grunow) Van Heurck, 1885: 151, pl. 38 fig. 4.
Synedra ulna f. *spathulifera* (Grunow) Skabichevskij, 1960: 242, fig. 81.
Fragilaria ulna var. *spathulifera* (Grunow) Main, 1988: 96.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Eunotiales P.C.Silva, 1962
Family Eunotiaceae Kützing, 1844
Genus *Eunotia* Ehrenberg, 1837

68. *Eunotia bilunaris* (Ehrenberg) Schaarschmidt, 1880: 159.

Synedra bilunaris Ehrenberg, 1832: 87.
Eunotia lunaris var. *bilunaris* (Ehrenberg) Grunow, 1885: pl. XXXV fig. 6B.

Observation. Crescent Island Crater: core NC20.

Occurrence. Sediment core.

69. *Eunotia curvata* (Kützing) Lagerstedt, 1884: 61.

Exilaria cruvata Kützing, 1833: No 112.

Observation. Main basin: Cocquyt and DeWever (2002), NM91.1-S.

Crescent Island Crater: Gasse (1986).

Occurrence. Plankton, epiphytic.

70. *Eunotia* cf. *incisa* W.Smith ex W.Gregory, 1854: 25, pl. IV fig. 4.

Eunotia sudetica var. *incisa* (W.Smith ex W.Gregory) Manguin, 1950.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

71. *Eunotia minor* (Kützing) Grunow, 1881: pl. 33 figs 20, 21.

Eunotia pectinalis var. *minor* (Kützing) Rabenhorst, 1864: 74.
Eunotia pectinalis f. *minor* (Kützing) O.Müller, 1910: 117.

Observation. Main basin: Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Crescent Island Crater: Gasse (1986), NC20.
Occurrence. Plankton, epiphytic, sediment core.

72. *Eunotia monodon* Ehrenberg, 1843: 414, pl. 1 fig. V.7.

Observation. Main basin: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

73. *Eunotia pectinalis* (Kützing) Rabenhorst, 1864: 73.

Eunotia pectinalis var. *stricta* (Rabenhorst) Van Heurck, 1881: pl. 33 fig. 18.
Eunotia pectinalis f. *elongata* Grunow, 1881: pl. 33 fig. 16 (text 1885: 143).
Eunotia pectinalis var. *impressa* O.Müller, 1898: 12.
Eunotia pectinalis [var. *minus*] f. *impressa* (O.Müller) Ant.Mayer, 1913: 63.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2012).
Crescent Island Crater: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.
In core NC20 from Crescent Island, a *Eunotia* cf. *pectinalis* was observed.

74. *Eunotia* cf. *tenella* (Grunow) Hustedt, 1913: 287, figs 20–25.

Eunotia arcus var. *tenella* Grunow, 1881: 34, figs 5–6.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

Remark. Besides the seven above mentioned *Eunotia* taxa, an unidentified species was reported in the Crescent Island core NC20, and in the main basin core NM91.1-S and core NM93.1-S.

Class Bacillariophyceae Haeckel, 1878
Order Mastogloiales D.G.Mann, 1990
Family Mastogloiaceae Mereschkowsky, 1903
Genus *Mastogloia* Thwaites ex W.Smith, 1856

75. *Mastogloia elliptica* (C.Agardh) Cleve, 1893: pl. 185 figs 24–27.

Mastogloia dansei var. *elliptica* (C.Agardh) Grunow, 1880: pl.4 fig. 19.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

76. *Mastogloia* sp.

Observation. Lake Sonachi: core NS 92-2-F.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Cymbellales D.G.Mann, 1990
Family Rhoicospheniaceae Chen & Zhu, 1983
Genus *Rhoicosphenia* Grunow, 1860

77. *Rhoicosphenia abbreviata* (C.Agardh) Lange-Bertalot, 1980: 586, pl. 1A, 3C, D fig. 5A.

Rhoicosphenia curvata (Kützing) Grunow, 1860: 511.

Observation. Main basin: Gasse (1986).
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Bottom mud, sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Cymbellales D.G.Mann, 1990
Family Anomoeoneidaceae D.G.Mann, 1990
Genus *Anomoeoneis* Pfitzer, 1871

78. *Anomoeoneis costata* (Kützing) Hustedt, 1959: 744, fig. 1111.

Anomoeoneis sphaerophora f. *costata* (Kützing) A.M.Schmid, 1977: 321, 329; invalid.

Observation. Lake Oloidien: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Bottom mud, sediment core.

79. *Anomoeoneis sculpta* (Ehrenberg) Cleve, 1895: 6.

Anomoeoneis sphaerophora var. *sculpta* (Ehrenberg) O.Müller, 1900: 303.
Anomoeoneis sphaerophora f. *sculpta* (Ehrenberg) Krammer, 1985: 13.

Observation. Main basin: Gasse 1986, core NM91.1-S.
Lake Oloidien: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Bottom mud, sediment core.

80. *Anomoeoneis sphaerophora* Pfitzer, 1871: 77, pl. 3 fig. 10.

Observation. Main basin: Rich (1932), Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2012).
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Oloidien: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Epiphytic, bottom mud, sediment core.
Rich (1932) reported various forms of this taxon resembling *A. sphaerophora* f. *rostrata* O.Müller, 1900: 303, pl. XII figs. 3–9.

81. *Anomoeoneis sphaerophora* var. *guentheri*, 1900: 302, pl. 12 figs 6–9.

Anomoeoneis var. *guentheri* (O.Müller) A.Cleve, 1953: 202, fig. 1927f, invalid.

Observation. Main basin: Gasse (1986).
Lake Oloidien: Gasse (1986).
Occurrence. Bottom mud.

Class Bacillariophyceae Haeckel, 1878
Order Cymbellales D.G.Mann, 1990
Family Cymbellaceae Greville, 1833
Genus *Cymbella* C.Agardh, 1830

82. *Cymbella cistula* (Ehrenberg) O.Kirchner, 1878: 189.

Observation. Main basin: Gasse (1986), Owino et al. (2020).
Occurrence. Plankton, sediment core.
Richardson and Richardson (1972) reported a *Cymbella* cf. *cistula* from sediment core material of Crescent Island, while, Gasse (1986) mentioned this taxon as *Cymbella cistula* (Hemprich) Grunow.

83. *Cymbella cistula* var. *africana* Cholnoky, 1958: 105, pl. 1 figs 14–16.

Observation. Crescent Island Crater: core NC20.
Occurrence. Sediment core.

84. *Cymbella cymbiformis* C.Agardh, 1830: 10.

Observation. Main basin: Gasse (1986).
Occurrence. Plankton.
Gasse (1986) reported this taxon as *Cymbella cymbiformis* (Kützing) Hustedt.

85. *Cymbella kappii* (Cholnoky) Cholnoky, 1956: 61, figs 17–20.

Cymbella turgidula var. *kappii* Cholnoky, 1953: 142, figs 12–16.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

86. *Cymbella lanceolata* C.Agardh, 1830: 9.

Navicula lanceolata (C.Agardh) Kützing, nom. illeg., 1844: 94, pl. 28 fig. 38, pl. 30 fig. 48.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

87. *Cymbella simonsenii* Krammer, 1985: 33, pl. 7 figs 1–9.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Remark. A *Cymbella* sp. was reported by Richardson and Richardson (1972), Owino et al. (2020) and Cocquyt and De Wever (2002), while Stoof-Leichsenring et al. (2012) mentioned several *Cymbella* sp. Also in core NM91.1-S, a *Cymbella* sp. was observed. However, we cannot verify if these concern *Cymbella* s.s. or *Cymbella* s.l.

Genus *Cymbopleura* (Krammer) Krammer, 1999

88. *Cymbopleura amphicephala* (Nägeli ex Kützing) Krammer, 2003: 70, pl. 91 figs 1–18, pl. 93 figs 2–8.

Cymbella amphicephala Nägeli ex Kützing, 1849: 890.

Observation. Main basin: Gasse (1986).
Occurrence. Plankton.

Genus *Encyonema* Kützing, 1834

89. *Encyonema elginense* (Krammer) D.G.Mann, 1990: 666.

Cymbella elginensis Krammer, 1980: 136, fig. 23.
Cymbella turgida W.Gregory, 1856: 5, pl. 1 fig. 18.
Encyonema turgidum (W.Gregory) Grunow, 1875: pl. 10 figs 49–53.

Observation. Main basin: Gasse (1986).
Crescent Island Crater: Gasse (1986).
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud.

90. *Encyonema gracile* Rabenhorst, 1853: 25, pl. 10.

Cymbella gracilis (Rabenhorst) Cleve, 1894: 169.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

91. *Encyonema mesianum* (Cholnoky) D.G.Mann, 1990: 666.

Cymbella mesiana Cholnoky, 1955: 160, figs 11, 12.

Observation. Crescent Island Crater: NC93, NC20.
Occurrence. Sediment core.

92. *Encyonema* cf. *minutum* (Hilse) D.G.Mann, 1990: 667.

Cymbella minuta Hilse, 1862: No. 1261.
Cymbella ventricosa var. *minuta* (Hilse) A.Cleve, 1955: 125, figs 1177g–i.

Observation. Main basin: NM91.1-S, NM93.1-S.
Occurrence. Sediment core.

93. *Encyonema muelleri* (Hustedt) D.G.Mann, 1990: 667.

Cymbella muelleri Hustedt, 1937: 425.
Cymbella muelleri Cholnoky nom. inval., 1953: 141.
Cymbella grossestriata var. *obtusiuscula* O.Müller, 1905: 154, pl. 1 fig. 13.

Observation. Main basin: Rich (1932), Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Cocquyt and De Wever (2002), NC20.

Lake Oloidien: Gasse (1986).

Lake Sonachi: Cocquyt and De Wever (2002).

Occurrence. Plankton, epiphytic, bottom mud, sediment core.

94. *Encyonema neomesianum* Krammer, 1997: 5, pl. 191 figs 7–9.

Cymbella minuta var. *pseudogracilis* (Cholnoky) Reimer, 1975: 50, pl. 9 figs 1a–2b.
Encyonema minutum var. *pseudogracile* (Cholnoky) Czarnecki, 1994: 157.
Cymbella turgida var. *pseudogracilis* Cholnoky, 1958: 112; pl. 2 figs 49–50.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

95. *Encyonema neomuelleri* Krammer, 1997: 142, figs 23–27.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

96. *Encyonema silesiacum* (Bleisch) D.G.Mann, 1990: 667.

Cymbella silesiaca Bleisch, 1864: No. 1802.
Cymbella minuta var. *silesiaca* (Bleisch) Reimer, 1975: 49, pl. 8 figs 7a–10b.
Cymbella ventricosa var. *silesiaca* (Bleisch) A.Cleve, 1955: 124, figs 1177d–f.

Observation. Crescent Island Crater: NC93, NC20.

Main basin: Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.

Occurrence. Epiphytic, sediment core.

97. *Encyonema ventricosum* (C.Agardh) Grunow, 1875: pl. 10 fig. 59.

Cymbella ventricosa (C.Agardh) C.Agardh, 1830: 9.

Observation. Crescent Island Crater: Gasse (1986).

Main basin: Gasse (1986).

Lake Oloidien: Gasse (1986).

Occurrence. Plankton, littoral, bottom mud.

Bachmann (1938) reported *Cymbella ventricosa* Kützing from the littoral zone of Lake Naivasha. According to Guiry and Guiry (2022) *Cymbella ventricosa* Kützing, 1844 is a nom. illeg. and the taxonomic or nomenclatural status (or both) of this entity is in some way unresolved and requires further investigation. Probably the taxon Bachmann observed is the same species as *Encyonema ventricosum* reported by Gasse (1986).

98. *Encyonema* sp.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Encyonopsis* Krammer, 1997

99. *Encyonopsis microcephala* (Grunow) Krammer, 1997: 91.

Cymbella microcephala Grunow, 1885: 63.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

100. *Encyonopsis* sp.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Geissleria* Lange-Bertalot & Metzeltin, 1996

101. *Geissleria* cf. *acceptata* (Hustedt) Lange-Bertalot & Metzeltin, 1996: 64.

Navicula acceptata Hustedt, 1950: 398, pl. 38 figs 66, 67.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

102. *Geissleria* cf. *decussis* (Østrup) Lange-Bertalot & Metzeltin, 1996: 65, pl. 104 fig. 2, pl. 125 figs 3–6.

Navicula decussis Østrup, 1910: 77, pl. 2 fig. 50.
Navigeia decussis (Østrup) Bukhtiyarova, 2013: 168.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

103. *Geissleria pseudolagerstedtii* (Cholnoky) J.C.Taylor & Cocquyt, 2019: 1.

Navicula pseudolagerstedtii Cholnoky, 1960: 75, pl. 6 fig. 326.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

104. *Geissleria* sp.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Placoneis* Mereschkowsky, 1903

105. *Placoneis* cf. *dicephala* (Ehrenberg) Mereschkowsky, 1903: 7, pl. 1 figs 11–13, 21, 22.

Navicula dicephala Ehrenberg, 1838: 185.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

106. *Placoneis* cf. *gastrum* (Ehrenberg) Mereschkowsky, 1903: 13, pl. 1 fig. 17.

Navicula gastrum (Ehrenberg) Kutzing, 1844: 94, pl. 28 fig. 56c.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

107. *Placoneis hambergii* (Hustedt) Bruder, 2007: 349.

Navicula hambergii Hustedt, 1924: 562, pl. 17 fig. 2.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Cymbellales D.G.Mann, 1990
Family Gomphonemataceae Kützing, 1844
Genus *Gomphonema* Ehrenberg, 1832

108. *Gomphonema acuminatum* Ehrenberg, 1832: 88.

Observation. Main basin: Owino et al. (2020).
Occurrence. Sediment core.

109. *Gomphonema acuminatum* var. *longiceps* (Ehrenberg) N.Abarca & R.Jahn, 2020: 36.

Gomphonema longiceps Ehrenberg, 1854: pl. 10/1 fig. 21.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

110. *Gomphonema affine* Kützing, 1844: 86, pl. 30 fig. 54.

Gomphonema lanceolatum var. *affine* (Kützing) A.Cleve, 1932: fig. 254c.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

111. *Gomphonema* cf. *angustatum* (Kützing) Rabenhorst, 1864: 283.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

112. *Gomphonema augur* Ehrenberg, 1841: 211.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

113. *Gomphonema gracile* Ehrenberg, 1838: 217, pl. 18 fig. 3.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Cocquyt and De Wever (2002), NC20.
Lake Oloidien: Gasse (1986), Verschuren et al. (2000b).
Lake Sonachi: Verschuren et al. (1999a), Cocquyt and De Wever (2002), NS93.2-F.
Occurrence. Plankton, epiphytic, bottom mud, sediment core.

114. *Gomphonema gracile* f. *turris* Hustedt, 1937: 439, pl. 28 figs 14–16.

Observation. Main basin: Cocquyt and De Wever (2002).
Occurrence. Epiphytic.

115. *Gomphonema* cf. *insigne* W.Gregory, 1856: 12, pl. 1 fig. 39.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

116. *Gomphonema intricatum* Kützing, 1844: 87, pl. 9 fig. 4.

Observation. Main basin: Rich (1932), Gasse (1986), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Gasse (1986), NC20.

Occurrence. Plankton, bottom mud, sediment core.

Richardson and Richardson (1972) reported *Gomphonema* cf. *intricatum* from sediment core material of Crescent Island.

117. *Gomphonema lanceolatum* Ehrenberg nom. illeg., 1843: 306, pl. II fig. 37.

Observation. Main basin: Rich (1932), Gasse (1986), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.

Lake Oloidien: Gasse (1986).

Occurrence. Plankton, bottom mud, sediment core.

Gomphonema lanceolatum has long been a very common name of a diatom taxon by which various *Gomphonema* species and multiple forms of *Gomphonema affine* were referred to (Reichardt 1999). *Gomphonema affine* is a common species of tropical and sub-tropical regions and sometimes frequently found (Reichardt 1999). For this reason, in this paper we have not put the taxon observed in Lake Naivasha and its satellite lakes in synonymy with *Gomphonema grunowii* R.M.Patrick & Reimer (1975: 131, pl. 17 fig. 6) as mentioned by Guiry in Guiry and Guiry (2022).

118. *Gomphonema naviculoides* W.Smith, 1856: 98.

Navicula gracile var. *naviculoides* (W.Smith) Grunow, 1880: pl. 24 fig. 13.

Observation. Main basin: Bachmann (1938).

Occurrence. Littoral.

119. *Gomphonema parvulum* (Kützing) Kützing, 1849: 65.

Gomphonema clavatum Ehrenberg, 1832: 88.

Observation. Main basin: Bachmann (1938), Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.

Lake Oloidien: Gasse (1986).

Lake Sonachi: NS93.2-F.

Occurrence. Plankton, littoral, bottom mud, sediment core.

Cocquyt and De Wever (2002) reported *Gomphonema* cf. *parvulum* from epiphytic materials taken in Crescent Island, the main basin of Lake Naivasha and Lake Sonachi.

120. *Gomphonema pseudoaugur* Lange-Bertalot, 1979: 202, figs 11–165.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM93.1-S.

Crescent Island Crater: NC20.
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

Cocquyt and De Wever (2002) reported *Gomphonema* cf. *pseudoaugur* from epiphytic materials taken in the main basin of Lake Naivasha and Lake Sonachi.

121. *Gomphonema pumilum* (Grunow) E.Reichardt & Lange-Bertalot, 1991: 528, pl. 6 figs 4–11.

Gomphonema intricatum f. *pumilum* Grunow, 1880: pl. 24 figs 35, 36.
Gomphonema intricatum var. *pumilum* A.Cleve, 1932: 99, fig. 252b.

Observation. Crescent Island Crater: Richardson and Richardson (1972), core NC20.
Occurrence. Sediment core.

Gasse (1986) reported *Gomphonema* cf. *pumilum* from bottom mud materials taken in the main basin of Lake Naivasha.

122. *Gomphonema subapicatum* F.E.Fritsch & M.F.Rich, 1929: 109, pl. 6 A, B.

Observation. Main basin: Bachmann (1938).
Occurrence. Littoral.

Bachmann (1938) remarked that the observed valves in Lake Naivasha were smaller than the dimensions given for this taxon by Fritsch & Rich (Fritsch et al. 1929).

123. *Gomphonema subclavatum* (Grunow) Grunow, 1884: 98, pl. 1 (A) fig. 13.

Observation. Main basin: Rich (1932), Bachmann (1938).
Lake Oloidien: Gasse (1986).
Occurrence. Littoral, bottom mud.

124. *Gomphonema subtile* var. *sagitta* (Schumann) Grunow, 1880: pl. 23 fig. 27.

Gomphonema sagitta Schumann, 1863: 187, pl. 9 fig. 29.

Observation. Lake Oloidien: Gasse (1986).
Occurrence. Bottom mud.

125. *Gomphonema sundaense* E.Reichardt, 2005: 129, pl. 6 figs 1–8.

Gomphonema clevei var. *javanicum* Hustedt, 1937: 441, pl. XXVII figs 6–13.

Observation. Main basin: Gasse (1986).
Occurrence. Bottom mud.

126. *Gomphonema turris* Ehrenberg, 1843: 416.

Gomphonema augur var. *turris* (Ehrenberg) Lange-Bertalot, 1985: 44, pl. 37 figs 1–7, pl. 38 figs 1–4, 8–12.
Gomphonema acuminatum var. *turris* (Ehrenberg) Wolle, 1890: pl. 28 fig. 25.

Observation. Main basin: Bachmann (1938).
Crescent Island Crater: NC20.
Occurrence. Littoral, sediment core.

127. *Gomphonema vibrio* var. *pulvinatum* (Braun ex Rabenhorst) R.Ross, 1986: 608.

Gomphonema pulvinatum Braun ex Rabenhorst, 1853: 58.
Gomphonema intricatum var. *pulvinatum* Braun ex Rabenhorst, 1853: 58.

Observation. Main basin: Cocquyt and De Wever (2002).
Occurrence. Epiphytic.

Remark. Beside the above mentioned *Gomphonema* taxa, an unidentified *Gomphonema* sp. was reported by Owino et al (2020), and some small unidentified *Gomphonema* valves were observed in cores NC20, NM91.1-S and NM93.1-S.

Genus *Gomphoneis* Cleve 1894

128. *Gomphoneis clevei* (Fricke) Gil, 1989: 267, 271, pl. 1 figs 4–12, pl. 4 figs 1–4, pl. 5 figs 1–4.

Gomphonema clevei Fricke, 1902: pl. 234 figs 44–46.

Observation. Main basin: NM93.1-S, and cf. this taxon in NM91.1-S.
Crescent Island Crater: NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Cymbellales D.G.Mann, 1990
Family Cymbellales incertae sedis
Genus *Gomphonella* Rabenhorst, 1853

129. *Gomphonella olivacea* (Hornemann) Rabenhorst, 1853: 61, pl. IX fig. 1.

Gomphonema olivaceum (Hornemann) Ehrenberg, 1838: 218.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Achnanthales P.C.Silva ,1962
Family Cocconeidaceae Kützing, 1844
Genus *Cocconeis* Ehrenberg, 1836

130. *Cocconeis disculus* (Schumann) Cleve, 1882: 139.

Navicula disculus Schumann, 1862: 21, fig. 23.
Navicula scutelloides var. *disculus* (Schumann) Torka, 1906: 15, fig. 3a.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

131. *Cocconeis* cf. *lineata* Ehrenberg, 1849: 301, pl. 5 (part 2) fig. 44.

Cocconeis placentula var. *lineata* (Ehrenberg) Van Heurck, 1885: 133 [Atlas pl. 30 figs 31, 32].
Cocconeis placentula f. *lineata* (Ehrenberg) Hustedt, 1957: 244.

Observation. Crescent Island Crater: NC93, NC20.
Occurrence. Sediment core.

Gasse (1986) mentioned that *Cocconeis placentula* var. *lineata* was associated with *Cocconeis placentula* in the samples studied from East Africa. However, we cannot know if this taxon was observed by Gasse (1986) in Lake Naivasha and its satellites lakes.

132. *Cocconeis placentula* Ehrenberg, 1838: 194.

Navicula pediculus var. *placentula* (Ehrenberg) Grunow, 1867: 15.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Cocquyt and De Wever (2002), NC93, NC20
Lake Sonachi: Gasse (1986), Cocquyt and De Wever (2002).
Occurrence. Plankton, bottom mud, sediment core.

133. *Cocconeis placentula* var. *euglypta* (Ehrenberg) Cleve, 1895: 170.

Cocconeis euglypta Ehrenberg, 1854: pl. XXXIV, pl. VI-A fig. 2.
Cocconeis placentula f. *euglypta* (Ehrenberg) Hustedt, 1957: 244.

Observation. Main basin: Rich 1932, NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC93, NC20.
Occurrence. Bottom mud, sediment core.

Gasse (1986) mentioned that this variety was associated with the species in the samples studied from East Africa. However, as the variety *euglypta* is reported to be rare, we cannot know if this taxon was observed by Gasse (1986) in Lake Naivasha and its satellites lakes.

134. *Cocconeis* sp.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Achnanthales P.C.Silva, 1962
Family Achnanthidiaceae D.G.Mann, 1990
Genus *Achnanthes* Bory, 1822

135. *Achnanthes* sp.

Observation. Main basin: Cocquyt and De Wever (2002).

Occurrence. Epiphytic.

Cocquyt and De Wever (2002) reported a *Achnanthes* sp. epiphytic on *Nymphaea caerulea* Savigny herbarium material collected in the main basin of Lake Naivasha. They only observed 3 valves of this taxon which was not illustrated.

The identity of the genus to which the taxon mentioned by Owino et al. (2020) as *Achnanthes* sp. belongs cannot be determined because these authors do not use the latest taxonomy in their paper.

Genus *Achnanthidium* Kützing, 1844

136. *Achnanthidium* cf. *affine* (Grunow) Czarnecki, 1994: 156.

Achnanthes affinis Grunow, 1880: 20.
Achnanthes minutissima var. *affinis* (Grunow) Lange-Bertalot, 1989: 104.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

137. *Achnanthidium exiguum* var. *heterovalvata* (Krasske) Czarnecki, 1994: 157.

Achnanthes exigua var. *heterovalvata* Krasske, 1923: 193, figs 9a, 9b.
Achnanthes heterovalvata (Krasske) Frenguelli, 1942: 95, pl. 1 figs 9–10.

Observation. Main basin: Cocquyt and De Wever (2002).
Crescent Island Crater: Cocquyt and De Wever (2002).
Lake Sonachi: Cocquyt and De Wever (2002).

Occurrence. Epiphytic.

138. *Achnanthidium exile* (Kützing) Heiberg, 1863: 119.

Achnanthes exilis Kützing, 1833: no. 12.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

139. *Achnanthidium minutissimum* (Kützing) Czarnecki, 1994: 157.

Achnanthes minutissima Kützing, 1833: 578, fig. 54.
Achnanthes minutissima var. *cryptocepala* Grunow, 1880: pl. XXVII figs 41–44.
Achnanthidium microcephalum Kützing, 1844: 75, pl. XIII, XIX.
Achnanthes microcephala (Kützing) Grunow, 1880: 22.
Achnanthes cryptocephala (Grunow) M.Peragallo, 1897: 4.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Lake Oloidien: Verschuren et al. (1999b), Verschuren et al. (2000b).
Lake Sonachi: Gasse (1986), NS93.2-F
Occurrence. Plankton, epiphytic, bottom mud, sediment core.

Genus *Gogorevia* Kulikovskiy, Glushchenko, Maltsev & Kociolek, 2020

140. *Gogorevia exilis* (Kützing) Kulikovskiy & Kociolek, 2020: 1610.

Achnanthes exigua Grunow, 1880: 21.
Achnanthidium exiguum (Grunow) Czarnecki, 1994: 157.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

Genus *Planothidum* Round & Bukhtiyarova, 1996

141. *Planothidum rostratum* (Østrup) Lange-Bertalot, 1999: 279.

Achnanthes rostrata Østrup, 1902: 35, pl. I fig. 11.
Achnanthes lanceolata subsp. *rostrata* (Østrup) Lange-Bertalot, 1991: 79.
Achnanthes lanceolata f. *rostrata* (Østrup) Hustedt, 1957: 251.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

142. *Planothidum* sp.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Platessa* Lange-Bertalot, 2004

143. *Platessa* cf. *strelnikovae* M.D.Enache, M.Potapova & E.Morales, 2014: 240, figs 1–23.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Cavinulaceae D.G.Mann, 1990
Genus *Cavinula* KD.G.Mann & Stickle, 1844

144. *Cavinula scutelloides* (W.Smith) Lange-Bertalot, 1996: 31.

Navicula scutelloides W.Smith, 1856: 91.

Observation. Main basin: Owino et al. (2020).
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Diadesmidaceae D.G.Mann, 1990
Genus *Diadesmis* Kützing, 1844

145. *Diadesmis confervacea* Kützing, 1844: 109, pl. 30 fig. 8.

Navicula confervacea (Kützing) Grunow, 1880: pl. 14 fig. 36.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Humidophila* (Lange-Bertalot & Werum) R.L.Lowe, Kociolek, J.R.Johansen, Van de Vijver, Lange-Bertalot & Kopalová, 2014

146. *Humidophila contenta* (Grunow) R.L.Lowe, Kociolek, J.R.Johansen, Van de Vijver, Lange-Bertalot & Kopalová, 2014: 357.

Navicula contenta Grunow, 1885: 109.
Diadesmis contenta (Grunow) D.G.Mann, 1990: 666.

Observation. Main basin: Cocquyt and De Wever (2002).

Lake Sonachi: NS93.2-F.

Occurrence. Epiphytic, sediment core.

Recent review of this taxon by Van de Vijver et al. (2022) has shown that often valves identified as *H. contenta* belong to a different species, namely *Humidophila simplex* (E.Reichardt) R.L.Lowe Kociolek, J.R.Johansen, Van de Vijver, Lange-Bertalot & Kopalová (2014: 359). As no photographs or drawings are available of the valves of *H. contenta* that have been sporadically observed in the main basin of Lake Naivasha and in Lake Sonachi, in future studies attention should focus on correct identification of this taxon.

Genus *Luticola* D.G.Mann, 1990

147. *Luticola mutica* (Kützing) D.G.Mann, 1990: 532, 670 figs a–c.

Navicula mutica Kützing 1844: 93, pl. 3 fig. 32.

Observation. Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Van der Meeren et al. (2019), NC20.

Main basin: Cocquyt and De Wever (2002), Owino et al. (2020), NM91.1-S, NM93.1-S.

Lake Sonachi: NS93.2-F.

Occurrence. Plankton, epiphytic, sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Amphipleuraceae Grunow, 1990
Genus *Frustulia* Rabenhorst, 1853

148. *Frustulia saxonica* Rabenhorst, 1853: 50 pl. VII fig. 1.

Frustulia rhomboides var. *saxonica* (Rabenhorst) De Toni, 1891: 277.

Observation. Lake Sonachi: Bachmann (1938), NS93.2-F.

Occurrence. Plankton, sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Brachysiraceae D.G.Mann, 1990
Genus *Brachysira* Kützing, 1836

149. *Brachysira exilis* (Kützing) Round & D.G.Mann, 1981: 227.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

150. *Brachysira* cf. *serians* (Brébission) Round & D.G.Mann, 1981: 227.

Anomoeoneis serians (Brébisson) Cleve, 1895: 7.

Observation. Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Neidiaceae Mereschkowsky, 1903
Genus *Neidium* Pfitzer, 1871

151. *Neidium affine* (Ehrenberg) Pfitzer, 1871: 39.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

152. *Neidium iridis* (Ehrenberg) Cleve, 1894: 69.

Neidium amphigomphys (Ehrenberg) Pfitzer, 1871: 39.
Neidium iridis var. *amphigomphys* (Ehrenberg) O'Meara, 1875: 337.

Observation. Main basin: Gasse (1986).
Crescent Island Crater: Gasse (1986).
Occurrence. Plankton.

153. *Neidium productum* (W.Smith) Cleve, 1894: 69.

Observation. Crescent Island Crater: Gasse 1986.
Occurrence. Bottom mud.

154. *Neidium* sp.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Sellaphoraceae Mereschkowsky, 1902
Genus *Fallacia* Stickle & D.G.Mann, 1990

155. *Fallacia pygmaea* (Kützing) Stickle & D.G.Mann, 1990: 668.

Navicula pygmaea Kützing, 1849: 77.
Lyrella pygmaea (Kützing) Makarova & Karayeva, 1987: 53, pl. 2 fig. 2.

Observation. Main basin: NM91.1-S, NM93.1-S.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Sellaphoraceae Mereschkowsky, 1902
Genus *Sellaphora* Mereschkowsky, 1902

156. *Sellaphora* cf. *damasii* (Hustedt) C.E.Wetzel, Ector, Van de Vijver, Compère & D.G.Mann, 2015: 226.

Navicula damasii Hustedt, 1962: 203, pl. VII fig. 1322.
Navicula subcontenta var. *africana* Hustedt, 1949: 85, pl. 4 figs 27, 28.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

157. *Sellaphora nyassensis* (O.Müller) D.G.Mann, 1989: 2.

Navicula nyassensis O.Müller, 1910: 83, pl. I fig. 5.
Navicula pupula var. *nyassensis* Lange-Bertalot, 1985: 89.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

158. *Sellaphora perventralis* (Hustedt) A.Tuji, 2003: 71.

Navicula perventralis Hustedt, 1937: 241, pl. 17 figs 49–50.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

159. *Sellaphora* cf. *pseudoventralis* (Hustedt) Chudaev & Gololobova, 2015: 254, figs 17–29.

Navicula pseudoventralis Hustedt, 1953: 631, figs 12, 13.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

160. *Sellaphora pupula* (Kützing) Mereschkovsky, 1902: 187, pl. 4 figs 1–5.

Navicula pupula Kützing, 1844: 93, pl. 30 fig. 40.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.
Crescent Island Crater: Gasse (1986), Cocquyt and De Wever (2002), NC20.
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

161. *Sellaphora rectangularis* (W.Gregory) Lange-Bertalot & Metzeltin, 1996: 102, pl. 25 figs 10–12, pl. 125 fig. 7.

Navicula pupula var. *rectangularis* (W.Gregory) Cleve & Grunow, 1880: 45.
Navicula pupula f. *rectangularis* (W.Gregory) Hustedt, 1961: 121, figs 1254 n–q.
Sellaphora pupula var. *rectangularis* (W.Gregory) Mereschkowsky, 1902: 191.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

162. *Sellaphora* cf. *seminulum* (Grunow) D.G.Mann, 1989: 2.

Navicula seminulum Grunow, 1860: 552, pl. 2 fig. 3.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

163. *Sellaphora* sp.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Pinnulariaceae D.G.Mann, 1990
Genus *Caloneis* Cleve, 1894

164. *Caloneis aequatorialis* Hustedt, 1921: 148, figs 5, 6.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

165. *Caloneis bacillum* (Grunow) Cleve, 1894: 99.

Observation. Crescent Island Crater: NC93, NC20.
Occurrence. Sediment core.

166. *Caloneis* cf. *clevei* (Lagerstedt) Cleve, 1894: 51.

Observation. Crescent Island Crater: NC93.
Occurrence. Sediment core.

167. *Caloneis silicula* (Ehrenberg) Cleve, 1894: 51.

Observation. Crescent Island Crater: NC93, NC20.
Occurrence. Sediment core.

168. *Caloneis ventricosa* (Ehrenberg) F.Meister, 1912: 116, pl. 17 fig. 4.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Pinnularia* Ehrenberg, 1843

169. *Pinnularia acrosphaeria* W.Smith, 1853: 58, pl. XIX fig. 183.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

170. *Pinnularia biundulata* (O.Müller) Kulikovskiy & Genkal, 2010: 497.

Pinnularia microstauron var. *biundulata* O.Müller, 1898: 25.
Pinnularia microstauron f. *biundulata* (O.Müller) Hustedt, 1930: 320, fig. 583.

Observation. Main basin: Gasse (1986).
Occurrence. Bottom mud.

171. *Pinnularia borealis* Ehrenberg, 1843: 420, pl. 4 fig. I.5, pl. 4 fig.V.5.

Observation. Main basin: NM91.1-S, NM93.1-S.
Occurrence. Sediment core.

172. *Pinnularia borealis* var. *scalaris* (Ehrenberg) Rabenhorst, 1864: 216.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

173. *Pinnularia* cf. *dubitabilis* Hustedt, 1949: 105, pl. 6 figs 11–13.

Pinnularia eburnea Zanon, 1941: 49, pl. III figs 16–18.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

174. *Pinnularia gibba* (Ehrenberg) Ehrenberg, 1843: 315.

Observation. Main basin: Cocquyt and De Wever (2002).
Crescent Island Crater: Gasse (1986).
Occurrence. Plankton, epiphytic.

175. *Pinnularia gibba* var. *sancta* (Grunow ex Cleve) F.Meister, 1932: 43, fig. 140.

Observation. Main basin: Stoof-Leichsenring et al. (2012), NM93.1-S, and cf. this taxon in NM91.1-S.
Occurrence. Plankton, epiphytic.

176. *Pinnularia interrupta* W.Smith, 1853: 59, pl. 19 fig. 184.

Navicula interrupta (W.Smith) Grunow, 1860: 521.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

177. *Pinnularia interruptiformis* Krammer, 2000: 109, pl. 85 figs 1–9.

Pinnularia biceps f. *petersenii* R.Ross, 1947: 201, pl. 9 fig. 11.

Observation. Crescent Island Crater: NC20.
Lake Oloidien: Gasse (1986).
Occurrence. Bottom mud, sediment core.

178. *Pinnularia mesolepta* (Ehrenberg) W.Smith, 1853: 58, pl. 19 fig. 182.

Navicula mesolepta Ehrenberg, 1843: 419, pl. 4/2 fig. 4.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

179. *Pinnularia major* (Kützing) Rabenhorst, 1853: 42, pl. 6 fig. 5.

Observation. Main basin: Owino et al. (2020).
Crescent Island Crater: Gasse (1986).
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

180. *Pinnularia subcapitata* W.Gregory, 1856: 9, pl. 1 fig. 30.

Observation. Crescent Island Crater: Gasse (1986).
Occurrence. Plankton.

181. *Pinnularia viridis* (Nitzsch) Ehrenberg, 1843: 305, 315, 385, pl. 1 fig. 7.

Observation. Main basin: Owino et al. (2020).
Occurrence. Sediment core.

Remark. Unidentified *Pinnularia* taxa are reported from Crescent Island (core NC20) and from the main basin (Cocquyt and De Wever 2002 and cores NM91.1-S and NM93.1-S.).

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Diploneidaceae D.G.Mann, 1990
Genus *Diploneis* Ehrenberg ex Cleve, 1894

182. *Diploneis elliptica* (Kützing) Cleve, 1894: 92.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

183. *Diploneis ovalis* (Hilse) Cleve, 1891: 44, pl. 2 fig. 13.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

184. *Diploneis pseudovalis* Hustedt, 1930: 253, fig. 403.

Observation. Main basin: Stoof-Leichsenring et al. (2012).
Occurrence. Sediment core.

185. *Diploneis* sp.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

An unidentified *Diploneis* taxon was also observed in the core taken from Crescent Island Crater (core NC20) and from the main basin (core NM91.1-S.).

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Naviculaceae Kützing, 1844
Genus *Adlafia* Gerd Moser, Lange-Bertalot & Metzeltin, 1998

186. *Adlafia pseudomuralis* (Hustedt) J.Y.Li & Y.Z.Qi, nom. inval., 2018: 5, pl. 1 fig. 6.

Navicula pseudomuralis Hustedt, 1937: 245, pl. 19 figs 25–27.
Fallacia pseudomuralis (Hustedt) D.G.Mann, 1990: 669.

Observation. Crescent Island Crater: Gasse (1986).
Occurrence. Plankton.

Genus *Hippodonta* Lange-Bertalot, Witkowski & Metzeltin, 1996

187. *Hippodonta* cf. *costulata* (Grunow) Lange-Bertalot, Metzeltin & Witkowski, 1996: 254, pl. 1 figs 6, 7, pl. 3 fig. 5, pl. 4 figs 6–9.

Navicula costulata Grunow, 1880: 27.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Mayamaea* Lange-Bertalot, 1997

188. *Mayamaea permitis* (Hustedt) Bruder & Medlin, 2008: 327.

Navicula permitis Hustedt, 1945: 919, pl. 41 figs 8, 9.

Observation. Main basin: Gasse (1896).
Occurrence. Bottom mud.

Genus *Navicula* Bory, 1822

189. *Navicula barbarica* Hustedt, 1949: 97, pl. IV figs 14–17.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

190. *Navicula capitatoradiata* H.Germain ex Gasse, 1986: 86, pl. 19 figs 8–9.

Observation. Crescent Island Crater: core NC20.
Occurrence. Sediment core.

191. *Navicula cari* var. *cincta* (Ehrenberg) Lange-Bertalot, 1980: 37, pl. 7 figs 1–23.

Observation. Main basin: Gasse (1986).
Crescent Island Crater: Gasse (1986).
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud.

192. *Navicula cryptocephala* Kützing, 1844: 95, pl. 3 figs 20, 26.

Observation. Main basin: Gasse ((1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986).
Occurrence. Plankton, epiphytic, bottom mud, sediment core.

193. *Navicula cryptotenella* Lange-Bertalot, 1985: 62, pl. 18 figs 22, 23, pl. 19 figs 1–10, pl. 27 fig. 1.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Sediment core.

194. *Navicula* cf. *exigua* W.Gregory nom. illeg., 1854: 99.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Sediment core.
According to Guiry and Guiry (2022) the taxonomic and nomenclatural status of *Navicula exigua* is in some way unresolved and requires further investigation.

195. *Navicula* cf. *glomus* J.R.Carter, 1981: 578, pl. 13 fig. 17.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

196. *Navicula minima* Grunow, 1880: pl. XIV fig. 15.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

197. *Navicula radiosa* Kützing, 1844: 91, pl. 4 fig. 23.

Navicula radiosa var. *acuta* (W.Smith) Grunow, 1860: 526.

Observation. Main basin: Rich (1932), Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).

Crescent Island Crater: Richardson and Richardson (1972), NC20.

Occurrence. Bottom mud, sediment core.

198. *Navicula radiosa* f. *divergentissima* Manguin, 1952: 26, fig. 54.

Navicula radiosa [var. *acuta*] f. *divergentissima* Manguin, 1952: 26, fig. 54.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

According to Guiry and Guiry (2022) the taxonomic status of this taxon requires further investigation.

199. *Navicula radiosafallax* Lange-Bertalot, 1993: 131, pl. 52 figs 1–3.

Navicula radiosa var. *parva* J.H.Wallace, 1960: 3, pl. 1 fig. 5.

Observation. Main basin: NM93.1-S, and cf. this taxon in NM91.1-S.

Occurrence. Sediment core.

200. *Navicula seminuloides* var. *sumatrensis* Hustedt, 1937: 239, pl. 17 figs 32, 33.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

Richardson and Richardson (1972) mentioned the name of this taxon as *Navicula seminuloides* var. *sumatrana*.

201. *Navicula rhynchocephala* Kützing, 1844: 152, pl. 30 fig. 35.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

202. *Navicula rostellata* Kützing, 1844: 95, pl. 3 fig. 65.

Navicula rhynchocephala var. *rostellata* (Kützing) Cleve & Grunow, 1880: 33.
Navicula viridula var. *rostellata* (Kützing) Cleve, 1895: 15.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

203. *Navicula* aff. *tenella* Brébisson ex Kützing, 1849: 74.

Navicula radiosa var. *tenella* (Brébisson ex Kützing) Van Heurck, 1885: 84.

Observation. Main basin: NM93.1-S.
Crescent Island Crater: Gasse (1986).
Occurrence. Plankton, sediment core.

204. *Navicula trivialis* Lange-Bertalot, 1980: 31, pl. 1 figs 5–9.

Observation. Main basin: NM91.1-S.
Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

205. *Navicula veneta* Kützing, 1844: 95, pl. 30 fig. 76.

Navicula cryptocephala var. *veneta* (Kützing) Rabenhorst, 1864: 198.
Navicula cryptocephala f. *veneta* (Kützing) Hustedt, 1957: 290.

Observation. Main basin: Cocquyt and De Wever (2002).
Crescent Island Crater: Gasse (1986).
Occurrence. Plankton, epiphytic.

206. *Navicula viridula* (Kützing) Ehrenberg, 1836: 53.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

207. *Navicula zanonii* Hustedt, 1949: 792, pl. 5 figs 1–5.

Observation. Main basin: Gasse (1986), NM91.1-S.
Occurrence. Bottom mud.

Remark. Owino et al. (2020) reported, besides an unidentified *Navicula*, also "*Navicula granatum*". Probably a typing error occurred as a *Navicula* with the epithet *granatum* does not exit. In core NM91.1-S, a small *Navicula* was observed. However, we do not know to which genus split off from *Navicula* s.l. this taxon currently belongs.

Genus *Navigiolum* Lange-Bertalot, Cavacini, Tagliaventi & Alfinito, 2003

208. *Navigiolum adamantiforme* (R.E.M.Archibald) J.C.Taylor & Lange-Bertalot, 2006: 177, figs 2a–k.

Navicula adamantiforme R.E.M.Archibald, 1966: 256, figs 5, 6.

Observation. Crescent Island Crater: core NC20.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Naviculales Bessey, 1907
Family Stauroneidaceae D.G.Mann, 1990
Genus *Craticula* Grunow, 1868

209. *Craticula buderi* (Hustedt) Lange-Bertalot, 2000: 101, pl. 58 fig. 3.

Navicula buderi Hustedt, 1954: 279, figs 11–15.

Observation. Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

210. *Craticula ambigua* (Ehrenberg) D.G.Mann, 1990: 666.

Navicula ambigua Ehrenberg, 1843: 417, pl. 2/2 fig. 9.
Navicula cuspidata var. *ambigua* (Ehrenberg) Kirchner, 1878: 178.

Observation. Main basin: Bachmann (1938).
Crescent Island Crater: NC93, NC20.
Occurrence. Littoral, sediment core.

211. *Craticula cuspidata* (Kützing) D.G.Mann, 1990: 666.

Navicula cuspidata (Kützing) Kützing, 1844: 94, pl. 3 figs 34, 37.

Observation. Main basin: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Plankton, sediment core.

212. *Craticula cuspidata* var. *major* (F.Meister) Czarnecki, 1994: 96.

Navicula cuspidata var. *major* F.Meister, 1912: 134, pl. 20 fig. 10.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

213. *Craticula elkab* (O.Müller ex O.Müller) Lange-Bertalot, Kusber & Cocquyt, 2007: 119.

Navicula elkab O.Müller ex O.Müller, 1910: 76 figs. 19–22.

Observation. Main basin: Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Van der Meeren et al. (2019), NC20.
Lake Oloidien: Gasse (1986), Verschuren et al. (1999b), Verschuren et al. (2000b).
Lake Sonachi: Gasse (1986), Cocquyt and De Wever (2002), NS93.2-F.
Occurrence. Epiphytic, bottom mud, sediment core.

214. *Craticula halophila* (Grunow) D.G.Mann, 1990: 666.

Navicula cuspidata var. *halophila* Grunow, 1885: 100, suppl. pl. B fig. 30.
Navicula halophila (Grunow) Cleve, 1894: 109.
Navicula halophila f. *robusta* Hustedt, 1959: 401, figs. 1–3.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.
Lake Sonachi: Gasse (1986), NS93.2-F.
Occurrence. Plankton, bottom mud, sediment core.

215. *Craticula* aff. *minusculoides* (Hustedt) Lange-Bertalot, 2001: 115.

Navicula minusculoides Hustedt, 1942: 88, fig. 5.

Observation. Crescent Island Crater: Gasse (1986).
Occurrence. Bottom mud.

216. *Craticula molestiformis* (Hustedt) Mayama, 1999: 2.

Navicula molestiformis Hustedt, 1949: 86, pl. 5 fig. 9.
Navicula twymaniana R.E.M.Archibald, 1966: 264, figs 41–43.

Observation. Crescent Island Crater: Gasse (1986).
Occurrence. Plankton.

217. *Craticula perrotettii* Grunow, 1868: 20, pl. 1 fig. 1.

Navicula perrotettii (Grunow) Cleve, 1894: 110, pl. 3 fig. 12.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Remark. Rich (1932) reported *Navicula cuspidata* var. *major* F.Meister 1912: 134, pl. 20 fig. 10. (*Craticula cuspidata* var. *major* (Meister) Czarnecki 1994: 96) in bottom mud from the main basin of Lake Naivasha. According the Guiry and Guiry (2022) the taxonomic status of this taxon requires further investigation, but the valves observed by Rich (1932) are very probably one of the larger *Craticula* species observed in Lake Naivasha, e.g., *Craticula cuspidata* or *Craticula perrotettii*.

Genus *Dorofeyukea* Kulikovskiy, Maltsev, S.A.Andreeva, T.Ludwig & Kociolek, 2019

218. *Dorofeyukea kotschyi* (Grunow) Kulikovskiy, Kociolek, Tusset & T.Ludwig, 2019: 178, figs 5–7.

Navicula kotschyi Grunow, 1860: 538, pl. 2 fig. 12.
Luticola kotschyi (Grunow) J.C.Taylor, W.C.Harding & C.G.M.Archibald, nom. inval., 2007: 50.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

Genus *Fistulifera* Lange-Bertalot, 1997

219. *Fistulifera pelliculosa* (Kützing) Lange-Bertalot, 1997: 73, figs 28–31.

Navicula pelliculosa (Kützing) Hilse, 1863: 68.

Observation. Crescent Island Crater: Gasse (1986).
Occurrence. Plankton.

Genus *Stauroneis* Ehrenberg, 1843

220. *Stauroneis phoenicenteron* (Nitzsch) Ehrenberg, 1843: 311, pl. 2 fig. 1, pl. 3 fig. 3.

Stauroneis phoenicenteron var. *genuina* Cleve 1894: 149.

Observation. Main basin: Rich (1932).

Occurrence. Bottom mud.

Class Bacillariophyceae Haeckel, 1878
Order Thalassiophysales D.G.Mann, 1990
Family Catenulaceae Mereschkowsky, 1902
Genus *Amphora* Ehrenberg ex Kützing, 1844

221. *Amphora copulata* (Kützing) Schoeman & R.E.M.Archibald, 1986: 429, figs 1–13, 30–34.

Amphora ovalis var. *libyca* (Ehrenberg) Cleve, 1895: 104 pro parte.
Amphora libyca Ehrenberg, 1841: 205 pro parte.

Observation. Main basin: Rich (1932), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), NC20.

Occurrence. Bottom mud, sediment core

Tropical African specimens of *Amphora libyca* (Ehrenberg) Cleve, 1895: 104 (synonym: *Amphora ovalis* var. *libyca* (Ehrenberg) Cleve, 1895: 104) were often put in synonymy with *Amphora copulata*. However, further investigation of the valves observed in Lake Naivasha and its satellite lakes is needed to see if these valves belongs to a cluster of different species. The revision work of the genus *Amphora* by Levkov (2009) suggests that we may indeed be dealing here with several species, as was the case for Lake Tanganyika where many new species were described.

222. *Amphora gouwsii* Cholnoky, 1953: 352, fig. 1.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

According to Guiry and Guiry (2022) the taxonomic status of this taxon requires further investigation.

223. *Amphora ovalis* (Kützing) Kützing, 1844: 107, pl. 5 figs 35, 39.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.

Occurrence. Sediment core.

224. *Amphora pediculus* (Kützing) Grunow, 1875: pl. 26 fig. 99.

Amphora ovalis var. *pediculus* (Kützing) Van Heurck, 1885: 59.

Observation. Main basin: Gasse (1986).
Crescent Island Crater: Richardson and Richardson (1972).
Lake Sonachi: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

Remark. Owino et al. (2020) reported a *Amphora* sp., probably one of the above mentioned taxa or one of the following *Halamphora* taxa, in the sediment core of the Main basin they studied.

Genus *Halamphora* (Cleve) Mereschkowsky, 1903

225. *Halamphora thermalis* (Hustedt) Levkov, 2009: 235, pl. 108 figs 19–39, pl. 230 figs 1–6.

Amphora thermalis Hustedt, 1949: 111, pl. 11 figs 1–3.
Amphora hartii Cholnoky, 1963: 30, figs 1–3.

Observation. Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

226. *Halamphora thumensis* (Ant.Mayer) Levkov, 2009: 236, pl. 98 figs 10–20, pl. 219 fig. 6.

Amphora coffeiformis var. *thumensis* Ant.Mayer, 1919: 208, pl. 9 fig. 69.
Cymbella thumensis (Ant.Mayer) Hustedt, 1945: 938.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

227. *Halamphora veneta* (Kützing) Levkov, 2009: 242, pl. 94 figs 9–19, pl. 102 figs 17–30, pl. 217 figs 1–5, pl. 218 figs 1–5.

Amphora veneta Kützing, 1844: 108, pl. 3 fig. 25.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986).
Lake Oloidien: Gasse (1986).
Lake Sonachi: Gasse (1986).
Occurrence. Epiphytic, bottom mud, sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Bacillariales Hendey, 1937
Family Bacillariaceae Ehrenberg, 1831
Genus *Hantzschia* Grunow, 1877

228. *Hantzschia amphioxys* (Ehrenberg) Grunow, 1880: 103.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse 1986, NC20.
Lake Oloidien: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Epiphytic, bottom mud, sediment core.

229. *Hantzschia amphioxys* var. *africana* Hustedt, 1921: 131, 197, pl. 1 fig. 25.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.
Lake Oloidien: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Epiphytic, bottom mud, sediment core.

Genus *Nitzschia* Hassall, 1845

230. *Nitzschia accommodata* Hustedt, 1949: 139, pl. 12 figs 27–31, 34, 35.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

231. *Nitzschia acicularis* (Kützing) W.Smith, 1853: 43, pl. 15 fig. 122.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

232. *Nitzschia* cf. *adapta* Hustedt, 1949: 135, pl. XII figs 3–6.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

233. *Nitzschia amphibia* Grunow, 1862: 574, pl. 28 fig. 23.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), NM91.1-S.
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.
Lake Oloidien: Gasse (1986).

Occurrence. Plankton, bottom mud, sediment core.

234. *Nitzschia amphibia* f. *frauenfeldii* (Grunow) Lange-Bertalot, 1987: 5, pl. 37 figs 15–22.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

According to Guiry and Guiry (2022) the taxonomic or nomenclatural status (or both) of this entity is in some way unresolved and requires further investigation.

235. *Nitzschia* cf. *archibaldii* Lange-Bertalot, 1980: 44, pl. 1 figs 14–18, pl. 7 figs 115–121.

Observation. Main basin: Gasse (1986).

Crescent Island Crater: Gasse (1986).

Lake Oloidien: Gasse (1986).

Lake Sonachi: NS93.2-F.

Occurrence. Plankton, bottom mud, sediment core.

236. *Nitzschia bacata* Hustedt, 1937: 485, pl. 41 figs 30–33.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.

Occurrence. Sediment core.

237. *Nitzschia brevissima* Grunow, 1880: 485, pl. LXVII fig. 4.

Nitzschia obtusa var. *brevissima* Grunow, 1885: 180.

Observation. Crescent Island Crater: Richardson and Richardson (1972).

Occurrence. Sediment core.

238. *Nitzschia clausii* Hantzsch, 1860: 40, pl. 6 fig. 7.

Observation. Lake Sonachi: NS93.2-F.

Occurrence. Sediment core.

239. *Nitzschia communis* Rabenhorst, 1860: no. 949.

Observation. Main basin: NM93.1-S, and cf. this taxon in NM91.1-S.

Lake Sonachi: NS93.2-F.

Occurrence. Sediment core.

240. *Nitzschia confinis* Hustedt, 1949: 145, pl. 11 figs 49–54, pl. 13 figs 84–90.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

241. *Nitzschia dissipata* (Kützing) Rabenhorst, 1860: no. 968.

Observation. Main basin: Owino et al. (2020).
Crescent Island Crater: NC20.
Occurrence. Sediment core.

242. *Nitzschia filiformis* (W.Smith) Van Heurck, 1896: 406, pl. 33 fig. 882.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

243. *Nitzschia fonticola* (Grunow) Grunow, 1881: pl. LXIX figs 15–20.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

244. *Nitzschia fonticola* var. *pelagica* Hustedt, in A.W.F.Schmidt 1924: pl 349 figs 15–16.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

245. *Nitzschia frustulum* (Kützing) Grunow, 1880: 98.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

246. *Nitzschia* aff. *frustulum* (Kützing) Grunow, 1880: 98.

Observation. Main basin: Cocquyt and De Wever (2002).
Crescent Island Crater: Gasse (1986), Cocquyt and De Wever (2002).
Occurrence. Epiphytic, bottom mud.

247. *Nitzschia frustulum* var. *perpusilla* (Rabenhorst) Van Heurck, 1885: 184.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

248. *Nitzschia goetzeana* O.Müller, 1905: 176, pl. II fig. 20.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

249. *Nitzschia gracilis* Hantzsch, 1860: 40, pl. 6 fig. 8.

Observation. Main basin: Gasse (1986), NM91.1-S, NM93.1-S.
Crescent Island Crater: Gasse (1986).
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

250. *Nitzschia* cf. *inconspicua* Grunow, 1862: 579, pl. 28/12 fig. 25.

Observation. Crescent Island Crater: NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

251. *Nitzschia* cf. *intermedia* Hantzsch ex Cleve & Grunow, 1880: 95.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.
Crescent Island Crater: Gasse (1986), NC20.
Lake Oloidien: Gasse (1986).
Lake Sonachi: NS93.2-F.
Occurrence. Plankton, bottom mud, sediment core.

252. *Nitzschia lacustris* Hustedt, 1922: 166.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Main basin: Owino et al. (2020).
Lake Oloidien: Gasse (1986).
Occurrence. Bottom mud, sediment core.

253. *Nitzschia lancettula* O.Müller, 1905: 175, pl. 2 fig. 15.

Observation. Main basin: Cocquyt and De Wever (2002).
Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.
Occurrence. Bottom mud, epiphytic, sediment core.

254. *Nitzschia latens* Hustedt, 1949: 148, pl. XII figs 30, 31.

Observation. Main basin: Cocquyt and De Wever (2002), NM93.1-S, and cf. this taxon in NM93.1-S.

Crescent Island Crater: NC20.

Lake Sonachi: NS93.2-F.

Occurrence. Epiphytic, sediment core.

255. *Nitzschia linearis* W.Smith, 1853: 39, pl. XIII fig. 110.

Observation. Main basin: Bachmann (1938), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM93.1-S, and cf. this taxon in NM91.1-S.

Crescent Island Crater: NC20.

Lake Oloidien: Gasse (1986).

Occurrence. Plankton, bottom mud, sediment core.

256. *Nitzschia* cf. *mediocris* Hustedt, 1949: 149, pl. XIII figs 21–24.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.

Occurrence. Sediment core.

257. *Nitzschia obtusa* W.Smith, 1853: 39, pl. XIII fig. 109.

Observation. Lake Sonachi: NS93.2-F.

Occurrence. Sediment core.

258. *Nitzschia palea* (Kützing) W.Smith, 1856: 89.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), Owino et al. (2020), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), Van der Meeren et al. (2019), NC20.

Lake Oloidien: Gasse (1986).

Lake Sonachi: Verschuren et al. (1999a), Verschuren et al. (2000b), NS93.2-F.

Occurrence. Plankton, bottom mud, sediment core.

259. *Nitzschia palea* var. *debilis* (Kützing) Grunow, 1880: 96.

Observation. Main basin: Gasse (1986), NM91.1-S, NM93.1-S.

Crescent Island Crater: Gasse (1986), Van der Meeren et al. (2019), NC20.

Lake Oloidien: Gasse (1986).

Lake Sonachi: NS93.2-F.

Occurrence. Plankton, bottom mud, sediment core.

260. *Nitzschia palea* var. *tenuirostris* Grunow, 1881: pl. 69 fig. 13.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Sediment core.

261. *Nitzschia palea* var. *tropica* Hustedt nom. illeg., 1949: 147 pl, XIII figs 26–29.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.
This taxon is different from *Nitzschia palea* var. *tropica* Grunow (1880: 96) and needs further investigation.

262. *Nitzschia paleacea* (Grunow) Grunow, 1881: pl. LXVIII figs 9, 10.

Observation. Main basin: NM91.1-S, NM93.1-S.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

263. *Nitzschia perminuta* Grunow, 1881: pl. LXIX figs 4, 7.

Nitzschia frustulum var. *perminuta* Grunow, 1881: pl. LXVIII fig. 31.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

264. *Nitzschia* cf. *pura* Hustedt, 1954: 480, figs 70–75.

Observation. Main basin: NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

265. *Nitzschia* cf. *pusilla* Grunow, 1862: 579, pl. 28 fig. 11.

Observation. Crescent Island Crater: Van de Meeren et al. (2019).
Occurrence. Sediment core.

266. *Nitzschia recta* Hantzsch ex Rabenhorst, 1862: no. 1283.

Observation. Main basin: Owino et al.(2020), NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Sediment core.

267. *Nitzschia rostellata* Hustedt, 1956: 127, figs. 69, 70.

Observation. Main basin: NM91.1-S, NM93.1-S.
Occurrence. Sediment core.

268. *Nitzschia sigma* (Kützing) W.Smith, 1853: 39, pl. XIII fig. 108.

Observation. Main basin: NM93.1-S, and cf. this taxon in NM91.1-S.
Crescent Island Crater: NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.

269. *Nitzschia sigmoidea* (Nitzsch) W.Smith, 1853: 38, pl. XIII fig. 104.

Observation. Lake Sonachi: Bachmann (1938).
Occurrence. Plankton.

270. *Nitzschia spiculoides* Hustedt, 1949: 151, pl. 13 figs 5, 6.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.
Richardson and Richardson (1972) reported *Nitzschia* cf. *spiculoides* from a sediment core taken in Crescent Island.

271. *Nitzschia subacicularis* Hustedt, 1938: 490, pl. 41 fig. 12.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), Owino et al. (2020), NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Lake Sonachi: NS93.2-F.
Occurrence. Sediment core.
Richardson and Richardson (1972) reported *Nitzschia* cf. *subacicularis* from a sediment core taken in Crescent Island Crater.

272. *Nitzschia subcommunis* Hustedt, 1949: 146, pl. XI 41 figs 55–58, pl. XIII figs 101–106.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.
Richardson and Richardson (1972) reported *Nitzschia* cf. *subcommunis* from a sediment core taken in Crescent Island Crater.

273. *Nitzschia subrostrata* Hustedt, 1942: 137, figs 313–319.

Observation. Main basin: Gasse (1986), NM91.1-S, NM93.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Bottom mud, sediment core.

274. *Nitzschia* cf. *subrostrata* Hustedt, 1942: 137, figs 313–319.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

275. *Nitzschia tarda* Hustedt, 1949: 138, pl. XII figs 24, 25.

Observation. Crescent Island Crater: Richardson and Richardson (1972), NC20.
Occurrence. Sediment core.

276. *Nitzschia thermalis* (Ehrenberg) Auerswald, 1861: no. 1064a.

Observation. Main basin: Rich (1932), Gasse (1986).
Crescent Island Crater: NC20.
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, bottom mud, sediment core.

277. *Nitzschia* cf. *tropica* Hustedt, 1949: 147, pl. XI figs 34–48.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

278. *Nitzschia vanoyei* Cholnoky, 1954: 420, figs 75–81.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.
Richardson and Richardson (1972) reported *Nitzschia* cf. *vanoyei* from a sediment core taken in Crescent Island Crater.

279. *Nitzschia vitrea* G.Norman, 1861: 7, pl. 2 fig. 4.

Observation. Main basin: Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.
Occurrence. Epiphytic.

Genus *Tryblionella* W.Smith, 1853

280. *Tryblionella calida* (Grunow) D.G.Mann, 1990: 678.

Nitzschia calida Grunow, 1880: 75.
Nitzschia tryblionella var. *calida* (Grunow) Van Heurck, 1885: 171.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

281. *Tryblionella umbilicata* (Hustedt) D.G.Mann, 1990: 679.

Nitzschia umbilicata Hustedt, 1949: 129, pl. XI fig. 65.

Observation. Main basin: NM91.1-S, NM93.1-S.
Occurrence. Sediment core.

Class Bacillariophyceae Haeckel, 1878
Order Rhopalodiales D.G.Mann, 1990
Family Rhopalodiaceae (Karsten) Topachevs'kyi & Oksiyuk, 1960
Genus *Epithemia* Kützing, 1844

282. *Epithemia adnata* (Kützing) Brébisson, 1838: 16.

Epithemia zebra (Ehrenberg) Ehrenberg, 1838: 191, pl. 14 fig. 7.
Epithemia zebra var. *genuina* Grunow nom inval., 1862: 328.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Cocquyt and De Wever (2002), NC20.

Lake Oloidien: Gasse (1986).

Lake Sonachi: Bachmann (1938), NS93.2-F.

Occurrence. Plankton, bottom mud, sediment core.

Gasse (1986) reported also *Epithemia porcellus* Kützing, 1844 (as *Epithemia zebra* var. *porcellus* (Kützing) Grunow, 1862) and *Epithemia adnata* var. *saxonica* (Kützing) R.M.Patrick, 1975 (as *Epithemia zebra* var. *saxonica* (Kützing) Grunow, 1862) from East Africa but it cannot be deduced from the publication if these two taxa were observed in the samples from Lake Naivasha and it satellite lakes.

283. *Epithemia argus* (Ehrenberg) Kützing, 1844: 35, pl. 22 figs 55, 56.

Observation. Crescent Island Crater: Gasse (1986), core NC20.
Occurrence. Plankton, sediment core.

284. *Epithemia argus* var. *intermedia* (Hilse) Ant.Mayer, 1936: 99, pl. 6 figs 13, 14, 16, pl. 7 fig. 5.

Epithemia intermedia Hilse, 1860: 76.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

285. *Epithemia hyndmannii* W.Smith, 1850: 124.

Observation. Lake Oloidien: Gasse (1986).
Occurrence. Plankton.

286. *Epithemia porcellus* Kützing, 1844: 34, pl. 5 figs 18, 19.

Epithemia zebra var. *porcellus* (Kützing) Grunow, 1862: 328, pl. 3 figs 3, 4.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

287. *Epithemia sorex* Kützing, 1844: 33, pl. 5/12 figs 5a–c.

Observation. Main basin: Bachmann (1938), Stoof-Leichsenring et al. (2012), NM91.1-S.
Crescent Island Crater: Richardson and Richardson (1972), NC20.
Lake Oloidien: Gasse (1986).
Occurrence. Plankton, littoral, sediment core.

288. *Epithemia turgida* (Ehrenberg) Kützing, 1844: 34, pl. 5 fig. 14.

Observation. Main basin: Rich (1932).
Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Bottom mud, sediment core.

289. *Epithemia turgida* var. *capitata* Fricke, 1904: pl. 250 fig. 7.

Observation. Main basin: Bachmann (1938).
Occurrence. Littoral.

290. *Epithemia* sp.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

Genus *Rhopalodia* O.Müller, 1895

291. *Rhopalodia gibba* (Ehrenberg) O.Müller, 1895: 65, pl. 1 figs 15–17.

Observation. Main basin: Gasse (1986), Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Gasse (1986), NC20.

Lake Oloidien: Gasse (1986).

Occurrence. Bottom mud, sediment core.

292. *Rhopalodia gibba* var. *ventricosa* (Kützing) H.Peragallo & M.Peragallo, 1900: 302, pl. 77 figs 3–5.

Epithemia ventricosa Kützing, 1844: 35, pl. 30 fig. 9a, b.
Rhopalodia ventricosa (Kützing) O.Müller, 1895: 65, pl. 1 figs 20, 21.

Observation. Main basin: Rich (1932).

Lake Sonachi: Rich (1932).

Occurrence. Plankton, bottom mud.

293. *Rhopalodia gibberula* Mereschkowsky, 1906: 32, fig. 19.

Observation. Main basin: Gasse (1986), Cocquyt and De Wever (2002), NM91.1-S, NM93.1-S.

Crescent Island Crater: Richardson and Richardson (1972), Cocquyt and De Wever (2002), NC20.

Lake Oloidien: Gasse (1986).

Lake Sonachi: Gasse (1986), Cocquyt and De Wever (2002), NS93.2-F.

Occurrence. Plankton, bottom mud, sediment core.

294. *Rhopalodia gibberula* var. *vanheurckii* O.Müller, 1900: 32, pl. X fig. 11, pl. XI figs 6, 7.

Observation. Crescent Island Crater: NC20.

Occurrence. Sediment core.

295. *Rhopalodia parallela* (Grunow) O.Müller, 1895: 64, pl. 1 figs 13, 14.

Epithemia gibba var. *parallela* Grunow, 1862: 327, pl. 6 fig. 7.
Epithemia parallela (Grunow) Ruck & Nakov, 2016b: 1.

Observation. Main basin: Rich (1932).

Occurrence. Bottom mud.

296. *Rhopalodia rhopala* (Ehrenberg) Hustedt, 1949: 128.

Epithemia rhopala (Ehrenberg) Cocquyt & R.Jahn, 2018: 51, figs 51–58.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

297. *Rhopalodia vermicularis* O.Müller, 1895: 67, pl. I figs 34–39, pl. II figs 10, 11, 14.

Epithemia vermicularis (O.Müller) Cocquyt & R.Jahn, 2018: 50, figs 47–50.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Lake Oloidien: Gasse (1986).
Occurrence. Bottom mud, sediment core.

Class Bacillariophyceae Haeckel, 1978
Order Surirellales D.G.Mann, 1990
Family Surirellaceae Kützing, 1844
Genus *Cymatopleura* W.Smith, 1851

298. *Cymatopleura* cf. *clavata* (O.Müller) Cocquyt & R.Jahn, 2014: 413.

Cymatopleura solea var. *clavata* O.Müller, 1904: 22, fig. 1.
Surirella clavata (O.Müller) Cocquyt & R.Jahn, 2017: 98.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Crescent Island Crater: NC20.
Occurrence. Sediment core.

299. *Cymatopleura* cf. *elliptica* (Brébisson) W.Smith, 1851: 13, pl. 3 figs 10, 11.

Surirella elliptica Brébisson ex Kützing, 1844: 61, pl. 28 fig. 28.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

300. *Cymatopleura librile* (Ehrenberg) Ehrenberg, 1845: 139.

Cymatopleura solea (Brébisson) W.Smith, 1851: 12, pl. 3 fig. 9.
Surirella solea (Brébisson) Brébisson, 1838: 17.

Observation. Main basin: Owino et al. (2020).

Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

Remark. Rich (1932) reported a *Cymatopleura* sp. from bottom mud in the main basin of Lake Naivasha, probably one of the taxa mentioned above.

Genus *Iconella* Jurilj, 1949

301. *Iconella biseriata* (Brébisson) Ruck & Nakov, 2016: 1.

Surirella biseriata Brébisson, 1835: 53, pl. VII.

Observation. Main basin: Stoof-Leichsenring et al. (2011), Stoof-Leichsenring et al. (2012).
Occurrence. Sediment core.

302. *Iconella engleri* (O.Müller) Cocquyt & R.Jahn, 2017: 87.

Surirella engleri O.Müller, 1903: 28, pl. I fig. 4.
Surirella engleri f. *angustior* O.Müller, 1903: 28, pl. I fig. 5.

Observation. Main basin: Bachmann (1938), Gasse (1986).
Occurrence. Plankton.

303. *Iconella fuellebornii* (O.Müller) Cocquyt & R.Jahn, 2017: 88.

Surirella fuellebornii O.Müller, 1904: 30.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

304. *Iconella linearis* (W.Smith) Ruck & Nakov, 2016: 2.

Surirella linearis W.Smith, 1853: 31, pl. VIII fig. 58.

Observation. Main basin: Rich (1932), Owino et al. (2020), NM91.1-S, NM93.1-S.
Crescent Island Crater: NC20.
Occurrence. Bottom mud, sediment core.

305. *Iconella linearis* var. *elliptica* (O.Müller) Cocquyt & R.Jahn, 2017: 90.

Surirella linearis var. *elliptica* O.Müller, 1904: 30, pl. 1 fig. 10.

Observation. Main basin: Rich (1932).
Occurrence. Bottom mud.

306. *Iconella nervosa* (A.W.F.Schmidt) Cocquyt & R.Jahn, 2017: 93.

Surirella tenera var. *nervosa* A.W.F.Schmidt, 1875: pl. 23 figs 15–17.
Surirella nervosa (A.W.F.Schmidt) Ant.Mayer 1913: 341, pl. 23 fig. 5, pl. 28 figs 8, 9.

Observation. Crescent Island Crater: NC20.
Occurrence. Sediment core.

307. *Iconella nyassae* (O.Müller) Cocquyt & R.Jahn, 2017: 93.

Surirella nyassae O.Müller, 1904: 33, pl. II fig. 3.

Observation. Crescent Island Crater: Richardson and Richardson (1972).
Occurrence. Sediment core.

308. *Iconella* cf. *tenera* (W.Gregory) Ruck & Nakov, 2016: 2.

Surirella tenera W.Gregory, 1856: 11, pl. 1 fig. 38.

Observation. Main basin: NM93.1-S.
Sediment core.

309. *Iconella* sp.

Observation. Main basin: NM91.1-S, NM93.1-S.
Occurrence. Sediment core.

Genus *Surirella* Turpin, 1828

310. *Surirella ovalis* Brébisson, 1838: 17.

Observation. Main basin: Owino et al. (2020).
Crescent Island Crater: NC20.
Occurrence. Sediment core.

Remark. Owino et al. (2020) also reported a *Surirella* sp. but we do not know if it concerns a *Surirella sensu stricto* or a *Iconella* species.

Conclusions

The diatom flora of Lake Naivasha and its satellite lakes is highly diverse with 310 species and infraspecific taxa reported to date. This number will certainly increase as many taxa remain unidentified, and some species and infraspecific taxa were lumped when

older taxonomy was used for identification. Moreover, it is well known that the more material is studied, the more species and infraspecific taxa will be observed, especially rare taxa. In addition, the present species richness is based only on morphological characteristics. Only a few studies exist at present on the molecular identity of the diatoms observed in tropical Africa. Available genetic data appears to be inadequate for most of the tropical African diatoms as shown by the results of Stoof-Leichsenring et al. (2012) where only less than 30% (14 out of the 49 species) could be more or less linked to a species present in the existing molecular library.

Extensive molecular investigation of the diatoms in Lake Naivasha and it satellite lakes, and in tropical Africa in general, would provide more information on the identity of the observed species and their endemic or cosmopolitan nature. We are convinced that the proportion of reported diatom species with a distribution restricted to tropical Africa (3.4%), to the African continent (1.0%), or to the pantropics (2.0%) based on the present checklist, will increase when molecular data of the observed taxa become available.

The checklist presented here will certainly provide a useful baseline for further diatom research in Kenya, and more generally in tropical Africa, in order to align molecular and morphological identifications.

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